

APPENDIX 9A-1

SUPPLEMENTAL WATERSHED PLAN

SUPPLEMENTAL WATERSHED PLAN

LOWER SILVER CREEK WATERSHED Santa Clara County, California

January 2001

Need for a Supplement

The original watershed agreement for the Lower Silver Creek watershed project was signed on September 23, 1983. Installation of the project was authorized on October 27, 1986. The project purpose is flood prevention. The plan includes non-structural and structural measures to reduce flood damage.

The sponsors shown in the original plan are the Evergreen Resource Conservation District (ERCD) and the Santa Clara Valley Water District (SCVWD), with federal assistance to be furnished by the Soil Conservation Service (SCS). The ERCD is now the Guadalupe-Coyote Resource Conservation District. The SCS is now the Natural Resources Conservation Service (NRCS).

The Lower Silver Creek watershed plan has been amended once. The original plan called for the SCS to administer all construction contracts. An exchange of correspondence completed on September 27, 1991 provided for the SCVWD to administer all construction contracts except those for biological and landscape mitigation plantings.

The structural measures proposed in the original plan consisted of 4.64 miles of channel work. This included construction of 0.87 miles of enlarged earth channel and 3.38 miles of concrete channel, and modification of 0.39 miles of existing concrete channel. The plan also included 6.6 acres of vegetative plantings, including 6.1 acres for habitat replacement and 0.5 acres for landscaping. This vegetative work was described as mitigation, but it was also an integral part of the design.

The first unit of construction was completed in January 1993. It consisted of approximately 70 feet of rectangular concrete channel, immediately downstream of the culvert under the intersection of King and McKee Roads. Additional work has been delayed as a result of objections to the project that arose when the SCVWD applied for a permit under Section 404 of the Clean Water Act. The objections focused on the proposed concrete lining. Alternatives were re-evaluated and a channel plan that reduces the amount of concrete has now been prepared.

The purpose of this supplement is to modify the features of the proposed channel design. There is no change in purpose or scope of the plan. Estimated benefits shown in the original plan have been adjusted to current price levels using cost index factors. The non-structural component of the plan remains unchanged.

Changes to the Recommended Plan

Plan Elements

A reach-by-reach description of the original proposal is found beginning on page 57 of the 1983 plan. This supplement modifies the plan to reduce the length of concrete channel. It does this by substituting a channel with a vegetated block wall and an earth-covered riprap bottom wherever this can be done without increasing the required right-of-way width. The level of protection will remain the same. However, design flows have been reduced as a result of a review of the project hydrology.

This supplement also documents modifications and additional details regarding the typical cross-sections shown in the plan. Figures 1 through 3 show new typical cross-sections for earth and concrete channels. Figure 4 shows a typical section and additional detail regarding the vegetated block wall channel, referred to herein as a "hybrid block channel." Additional channel design information, including the new design flows, may be found in Table 3B.

The design changes for the earth channel reaches will provide more vegetation within the channel. The additional vegetation will increase resistance to flow, so a larger cross-section will be required in order to maintain the level of protection. This will be achieved by eliminating the maintenance road at the top of one bank to allow a wider excavation, and providing maintenance access in the channel bottom.

The changes in the proposed cross-sections will produce a design water surface elevation that is somewhat higher than originally planned. Floodwalls will be constructed at the edge of the right-of-way where needed to provide the necessary depth. The original plan included floodwalls along about 4,300 feet of the channel. The modified plan includes floodwalls along about 9,000 feet. It also includes an additional culvert replacement, at Story Road.

The mitigation plan is also modified, to provide about 6 acres of wetlands and 14 acres of riparian and upland habitat planting (estimated to reach 22 acres of total canopy area at maturity). As in the original plan, these areas are incorporated into the channel design. In addition, intermittent tree clusters will be planted along the low-flow channel in earth and hybrid block reaches wherever the final hydraulic design shows that this can be done without encroaching on the required freeboard.

Most of the land required for the project was already owned by the SCVWD at the time of the original plan. The plan provided for the acquisition of an estimated 5.61 acres of additional land rights. This estimate has been revised to 6.46 acres.

A reach-by reach description of the modified plan follows. The description is based on preliminary designs, and some items may be changed somewhat as final designs are developed.

Reach 1 extends from Coyote Creek to Miguelita Creek, approximately 1,200 feet downstream of McKee Road. Proposed work in this reach includes the following:

- An enlarged earth channel from Coyote Creek to a point about 200 feet downstream of Wooster Avenue (Reach 1a).
- A hybrid block channel from the end of the earth channel to just downstream of the railroad bridge (Reach 1b).
- A trapezoidal concrete channel from the end of the hybrid block channel to the existing lined channel under Highway 101 and Marburg Way (part of Reach 1c).
- A trapezoidal concrete channel from the upstream side of Marburg Way to a point about 800 feet upstream (remainder of Reach 1c).
- An enlarged earth channel from there to the curve at King Road (Reach 1d).

If final design studies show that sufficient land rights are available, a hybrid block channel would be used instead of concrete in part or all of Reach 1c. Should this be done, any extra cost would be a non-project cost.

Two grouted rock grade control structures will be installed in the bottom of the lower reach of earth channel. One will be 2 feet high and the other 2.5 feet. Both will include low flow notches and resting pools for fish. Floodwalls will be installed along the hybrid block channel and the earth channel in Reach 1d.

The original plan included the construction of 0.14 miles of levees at the outlet of Lower Silver Creek. However, the land protected by the levees would still be subject to flooding from Coyote Creek. The levees would impede the recession of the Coyote Creek overflows. Therefore, the levees are deleted from the plan.

The channel bottom in the earth reaches will provide about 2.0 acres of emergent wetlands. Approximately 3.2 acres of riparian trees and shrubs will also be planted.

The bridge at Wooster Avenue is being replaced by the City of San Jose. This will be done even if the project is not installed. Therefore, it is not included in the project cost, although it may be incorporated into the project's construction contract. The new bridge will accommodate the hybrid block channel to be installed beneath it. The bridges at the railroad, Highway 101, and Marburg Way will remain. Approximately 2.05 acres of land rights will be acquired, all private land.

The original plan provided for flood-proofing two buildings in this reach. This has not yet been done. It will remain part of the plan.

Reach 2 extends from the end of Reach 1 to the upstream end of the triple box culvert under the intersection of King and McKee Roads. The plan for this reach is a rectangular concrete channel. Approximately 70 feet of it have already been built. The completed portion has the low-flow channel in the center of the bottom. The remainder will be built with the low-flow channel along the base of the west wall. Low weirs with notches to pool water and trap sediment will also be provided. Riparian trees and vines, totaling about 0.3 acres, will be planted at the top of the wall.

The triple box culvert under the King-McKee intersection will remain. No additional right-of-way is required in this reach.

Reach 3 is from the upstream end of the King-McKee culvert to the downstream end of the triple box culvert under Interstate 680. Proposed work in Reach 3 includes:

- An enlarged earth channel from the King-McKee culvert to a point about 1,600 feet upstream, next to a bend in Checkers Drive (Reach 3a). Most of this reach is along the north edge of Plata Arroyo Park.
- A trapezoidal concrete channel from the bend in Checkers Drive to the downstream end of an existing trapezoidal concrete lining (Reach 3b). The length of this reach is approximately 975 feet.
- Modification of the existing concrete-lined reach (Reach 3c) to accommodate the design flow and allow for fish passage. Total length of this reach is about 2095 feet, including 110 feet of triple box culvert at Sunset Avenue. The upper end of this reach is about 300 feet downstream of San Antonio Street.
- A trapezoidal concrete channel from the end of Reach 3c to a point about 300 feet upstream of San Antonio Street (Reach 3d).
- An enlarged earth channel from the end of Reach 3d to Kammerer Avenue (Reach 3e). Most of this reach is along the north side of Mayfair Park.
- An enlarged earth channel from Kammerer Avenue to Interstate 680 (Reach 3f). This reach lies along the north side of the Mathson School grounds.

The channel through the two parks will include an earth levee on the north side to contain the flows. The south bank will be blended into the parks. The reach through the school will be designed to allow it to be used as an outdoor classroom. Resting pools will be located away from public access to limit predation.

The modification of the existing trapezoidal concrete channel consists of cutting a strip out of the bottom and replacing it with a concrete-lined low-flow channel. Floodwalls will also be installed along the existing and new concrete channels as necessary.

The low-flow channel in the earth reaches will provide about 0.5 acres of emergent wetlands. Approximately 3.7 acres of riparian trees and shrubs will also be planted, along both the earth and concrete reaches.

The bridge at Alum Rock Avenue in Reach 3c will be modified to increase the flow capacity beneath it. The triple box at Sunset Avenue will be modified to accommodate the design flow as necessary. The bridge at San Antonio Street will remain. The bridge at Kammerer Avenue will be removed and replaced with a footbridge. The other three bridges proposed for removal in the original plan have been removed by others, at no cost to the project. Some of the lighting and irrigation facilities in the park will be relocated, along with some fencing. The parking lot at Mathson School will also be relocated. The sports track relocation in the original plan has been done by others, at no cost to the project.

Approximately 4.35 acres of land rights will be acquired in Reach 3. This includes 0.92 acres of private land, 1.63 acres in the two parks, and 1.8 acres of school grounds.

Reach 4 extends from the downstream end of the Interstate 680 culverts to North Babb Creek. A hybrid block channel will be installed from the upstream side of Interstate 680 to the upstream end of the reach. Floodwalls will be provided along about 1,800 feet of the channel.

The low-flow channel will provide about 1.0 acres of emergent wetlands. Approximately 2.2 acres of riparian trees and shrubs will also be planted.

The double box culvert at Jackson Avenue will be replaced with a bridge. A third box will be added at Capitol Avenue and will include a low-flow channel. The triple box at Interstate 680 will remain as is. No additional right-of-way is required in this reach.

Reach 5 runs from North Babb Creek to South Babb Creek, including the junction and transition at the downstream end. A hybrid block channel will be installed, along with short lengths of floodwall. The low-flow channel will provide about 1.0 acres of emergent wetlands. Approximately 1.7 acres of riparian trees and shrubs will also be planted.

The triple box culvert at Story Road will be replaced with a bridge. A footbridge at the end of Silver Avenue and a roadway bridge at Murtha Drive will remain. Approximately 0.06 acres of land rights will be acquired. This land is located on the north side of Story Road, and is needed because the culverts to be removed extend about 140 feet downstream from the edge of the road.

Reach 6 extends from South Babb Creek through Cunningham Avenue. A hybrid block channel will be installed from South Babb Creek to Moss Point Drive, and from Moss Point Drive through Cunningham Avenue. The rock riprap in the bottom will be omitted upstream of Moss Point Drive because the design velocities will be non-erosive. Floodwalls will be included along about 2,200 feet of the channel. The low-flow channel will provide about 2.0 acres of emergent wetlands. About 2.4 acres of riparian trees and shrubs will also be planted.

Existing road crossings, a triple box culvert at Moss Point Drive and bridges at Ocala and Cunningham Avenues, will remain. No additional right-of-way is required in this reach.

Mitigation Features

The original plan proposed mitigation plantings along about 1.2 miles of the creek, at the locations described on page 61. The modified plan includes riparian plantings along the entire channel. A low-flow channel for fish passage will be provided in all newly constructed reaches. The plan also includes adding a low-flow channel to the existing trapezoidal concrete channel in Reach 3. In earth and hybrid block reaches, the channel will include rock vortex weirs to concentrate low flows and aerate water. The concrete channel bottoms will include resting pools.

Items related to pollution control during construction and maintenance activities will conform to current practice at the time they occur. These are discussed in more detail in the "Best Management Practices" section of the initial study/environmental assessment for the modified plan.

Costs

Tables 1 and 2 show the estimated installation costs of the project as modified. Completed work and remaining work were not separated because the construction cost of the completed work was only \$195,000. Table 4 shows average annual costs. Table 2A has been deleted because there are no costs allocated to any purpose other than flood prevention. Cost sharing percentages are unchanged from the original plan. Project administration costs are not shared but are borne by the agencies that incur them. Any non-project costs will be the responsibility of the Santa Clara Valley Water District.

Installation and Financing

Supplement No. 1 provided for NRCS to administer the construction contracts for mitigation plantings and for the SCVWD to administer all other construction contracts. The SCVWD will now do all the contracting. In addition to the items listed on page 65, the SCVWD will be responsible for preparing and administering the contracts, and inspecting construction. The project administration costs in Table 2 have been adjusted accordingly. The SCVWD will carry out its responsibilities in accordance with OMB Circular A-102; 7 CFR 3015, 3016, 3017, 3018, and 3052; and the NRCS Contracts, Grants, and Cooperative Agreements Manual.

A project agreement will be signed by the SCVWD and NRCS prior to the issuance of invitations to bid on each construction contract. The project agreement is the instrument that obligates the PL-566 construction funds. Each one will be signed after NRCS has approved the design, plans and specifications and the SCVWD has furnished a land rights certification. If funds are not available at the time a contract bid package is ready to be issued, a modified form of project agreement will be used. This modified agreement will not obligate funds. Instead it will provide for the SCVWD to install that particular construction unit with other funds, and for California NRCS to ask for money to

reimburse the SCVWD in future annual funding requests. The agreement may include an expiration date.

Operation, Maintenance, and Replacement

An operation and maintenance agreement for the entire project took effect on September 27, 1991. Each unit of construction becomes subject to the agreement upon completion. There is no change in the responsibilities set forth on page 67 of the original plan. The agreement presently includes an operation and maintenance plan for Reaches 1 and 2. That plan will be modified to reflect the changes in design configuration.

Table 1 (Revised) - Estimated Installation Cost
Lower Silver Creek Watershed, California

Installation Cost Item	Unit	Number	Estimated Cost (Dollars) ¹		Total
			PL-566 Funds	Other Funds	
<u>Non-Structural Measures</u>					
Floodproofing	Structures	2	12,000	3,000	15,000
<u>Structural Measures</u>					
Channel Work (M)	Miles	4.64	26,180,000	12,110,000	38,290,000
Total Project			26,192,000	12,113,000	38,305,000

¹ Price base 2000.

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Table 2 (Revised) - Estimated Cost Distribution - Structural and Non-structural Measures
Lower Silver Creek Watershed, California
(Dollars)¹

Item	Construction	Engineering	Project Admin.	Total PL-566	Land Rights	Project Admin.	Total Other	Total Installation Cost
<u>Non-structural Measures</u>								
Floodproofing	9,000	2,000	1,000	12,000	1,000	2,000	3,000	15,000
Subtotal - Non-structural	9,000	2,000	1,000	12,000	1,000	2,000	3,000	15,000
<u>Structural Measures</u>								
Reaches 1 and 2	8,660,000	520,000	480,000	9,660,000	1,780,000	520,000	2,300,000	11,960,000
Reach 3	4,070,000	250,000	220,000	4,540,000	6,150,000 ²	240,000	6,390,000	10,930,000
Reach 4	4,240,000	260,000	230,000	4,730,000	1,630,000 ³	250,000	1,880,000	6,610,000
Reaches 5 and 6	6,500,000	390,000	360,000	7,250,000	1,150,000 ⁴	390,000	1,540,000	8,790,000
Subtotal - Structures	23,470,000	1,420,000	1,290,000	26,180,000	10,710,000	1,400,000	12,110,000	38,290,000
Grand Total	23,479,000	1,422,000	1,291,000	26,192,000	10,711,000	1,402,000	12,113,000	38,305,000

¹ Price base 2000.

² Includes \$140,000 for modifying the Alum Rock Ave. bridge, \$20,000 for a pedestrian bridge, \$50,000 for modifying the Sunset Ave. culvert, and \$12,000 for modifying park and school facilities.

³ Includes \$960,000 for a bridge at Jackson Ave. and \$670,000 for modifying the Capitol Expwy. culverts.

⁴ Includes \$1,010,000 for a bridge at Story Rd.

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Table 3B (Revised) - Structural Data - Channel Work
Lower Silver Creek Watershed, California

Reach	Station	Drainage Area (sq. mi.)	Design Dischg. ¹ (cfs)	Channel Dimensions					Velocity (ft./sec.) ⁴	Excav. Volume (cu. yds.)	Type of Work ⁵	Existing Channel Type ⁶	Present Flow Cond. ⁷
				Channel Config. ² (ft./ft.)	Gradient (ft./ft.)	Bottom Width (ft.)	Side Slope (ft.)	Water Depth (ft.)					
1a	0+50 to 8+20	43.4	5,630	Earth	0.0006	65	2:1	15.8	0.043	0.024	8	II	M(1956)
1b	8+20 to 13+50	43.4	5,630	HB	0.0028	62	0.8:1	9.9	0.046	n.c.	8	II	M(1956)
1c	13+50 to 18+60	43.4	5,630	TC	0.0028	35	1.5:1	12.8	0.015	0.015	8	II-L	M(1956)
	18+60 to 20+30	(Existing trapezoidal concrete channel under Hwy. 101 and Marburg Way.)											
1d	20+30 to 28+00	43.4	5,630	TC	0.0028	35	1.5:1	12.8	0.015	0.015	8	II-L	M(1956)
	28+00 to 37+85	43.4	5,630	Earth	0.0008	75	2:1	13.0	0.035	0.024	8	II	M(1956)
2	37+85 to 51+70	43.4	4,930	RC	0.0022	48	Vert.	11.7	0.014	0.014	120,000	II-L	M(1956)
	51+70 to 54+00	(Existing triple box culvert under King and McKee Roads.)											
3a	54+00 to 70+00	36.1	4,830	Earth	0.0020	50	2:1 ⁸	10.8	0.035	0.024	8	II	M(1956)
3b	70+00 to 79+75	36.1	4,830	TC	0.0017	35	1.5:1	9.8	0.015	0.015	8	II-L	M(1956)
3c	79+75 to 87+07	36.1	4,830	TC ¹⁰	0.0015	25	1.5:1	9.8	0.015	0.015	8	II-L	M(1956)
	87+07 to 88+07	36.1	4,830	Modify existing bridge at Alum Rock Avenue.									
	88+07 to 93+10	36.1	4,830	TC ¹⁰	0.0015	25	1.5:1	9.8	0.015	0.015	8	II-L	M(1956)
	93+10 to 94+20	36.1	4,830	Modify triple box culvert under Sunset Avenue.									
	94+20 to 100+70	36.1	4,830	TC ¹⁰	0.0015	25	1.5:1	9.8	0.015	0.015	8	II-L	M(1956)
3d	100+70 to 107+25	36.1	4,830	TC	0.0035	25	1.5:1	12.3	0.015	0.015	8	II-L	M(1956)
3e	107+25 to 114+40	36.1	4,830	Earth	0.0034	60	2:1 ⁸	12.4	0.035	0.024	8	II	M(1956)
3f	114+40 to 123+40	36.1	4,830	Earth	0.0020	75	2:1 ⁸	12.4	0.035	0.024	70,000	II	M(1956)
4a	123+40 to 127+40	(Existing triple box culvert under Interstate 680.)											
	127+40 to 129+60	33.7	4,600	HB	0.0027	62	0.8:1	9.9	0.046	n.c.	8	II	M(1977)
	129+60 to 130+80	33.7	4,600	Replace the Jackson Avenue box culverts with a bridge.									
4b	130+80 to 153+80	33.7	4,600	HB	0.0027	62	0.8:1	9.9	0.046	n.c.	8	II	M(1977)
	153+80 to 156+00	33.7	4,600	Add third box with low-flow channel to existing double box at Capitol Expressway.									
4c	156+00 to 169+00	33.7	4,600	HB	0.0049	34	0.8:1	10.0	0.035	n.c.	40,000	II	M(1977)

Table 3B (Revised) - Structural Data - Channel Work
Lower Silver Creek Watershed, California
(Continued)

Reach	Station	Drainage Area (sq. mi.)	Design Dischg. ¹ (cfs)	Channel Config. ²	Channel Dimensions			n-value Aged	Velocity (ft./sec.) ⁴	Excav. Volume (cu.yds.)	Type of Work ⁵	Existing Channel Type ⁶	Present Flow Cond. ⁷
					Gradient (ft./ft.)	Bottom Width (ft.)	Side Slope (ft.)						
5a	169+00 to 171+40	33.7	4,600	HB	0.0049	34	0.8:1	10.0	0.035	n.c.			
5b	171+40 to 180+00	31.2	4,210	HB	0.0036	37	0.8:1	9.9	0.035	n.c.			
	180+00 to 182+60	31.2	4,210	Replace the Story Road box culverts with a bridge.									
5c	182+60 to 201+60	31.2	4,210	HB	0.0012	50	0.5:1	11.0	0.035	n.c.			
6a	201+60 to 216+60	26.3	3,600	HB	0.0011	50	0.75:1	11.2	0.035	n.c.			
	216+60 to 217+20	(Existing triple box culvert under Moss Point Drive.)											
6b	217+20 to 244+42	26.3	3,600	HB	0.0060	80	0.8:1	10.4	0.037	n.c.			

¹ 1 percent chance peak flow.

² HB = Hybrid block channel.

TC = Trapezoidal concrete channel.

RC = Rectangular concrete channel.

³ n.c. = Not computed.

⁴ Velocity for aged condition and 1 percent chance peak flow.

⁵ II = Enlargement or realignment of existing channel or stream.

II-L = Includes impervious lining.

⁶ M = Man-made ditch or previously modified channel (date modified).

⁷ I = Intermittent - Continuous flow through some seasons of the year, but little or no flow during other seasons.

⁸ Included in following entry.

⁹ Left bank (looking upstream) to be 2:1; right bank to blend into existing landscape grading.

¹⁰ Add low-flow channel and floodwalls to existing trapezoidal concrete channel.

January 2001

Table 4 (Revised) - Estimated Average Annual NED Costs
Lower Silver Creek Watershed, California
(Dollars)¹

Evaluation Unit	Amortization of Installation Cost	Operation, Maintenance, and Replacement Cost	Total
<u>Non-Structural</u>			
Floodproofing	1,000	400	1,400
<u>Structural</u>			
Channel Work	2,541,000	47,000	2,588,000
Grand Total	2,542,000	47,400	2,589,400

January 2001

¹ Price base 2000, amortized over 100 years at a discount rate of 6-5/8 percent.

Table 5 (Revised) - Estimated Average Annual Flood Damage Reduction Benefits
Lower Silver Creek Watershed, California
(Dollars)¹

Item	Estimated Average Annual Damage		Damage Reduction Benefit
	Without Project	With Project	
<u>Floodwater</u>			
Nonagricultural			
Buildings and Improvements	2,328,000	230,000	2,098,000
Vehicles	429,000	66,000	363,000
Transportation Disruption	30,000	10,000	20,000
Emergency Services	25,000	4,000	21,000
Subtotal	2,812,000	310,000	2,502,000
<u>Sediment</u>			
Overbank Deposition	20,000	0	20,000
Subtotal	20,000	0	20,000
Grand Total	2,832,000	310,000	2,522,000

¹ Price base 2000.

January 2001

**Table 6 (Revised) - Comparison of NED Benefits and Costs
Lower Silver Creek Watershed, California
(Dollars)¹**

Evaluation Unit	Damage Reduction	Savings in Future Costs	Total	Average Annual Cost ²	Benefit- Cost Ratio
<u>Non-structural</u> Floodproofing	4,000		4,000	1,400	2.9:1
<u>Structural</u> Channel Work	2,518,000	305,000	2,823,000	2,588,000	1.1:1
Total	2,522,000	305,000	2,827,000	2,589,400	1.1:1

¹ Price base 2000.

² From Table 4.

January 2001

APPENDIX 9A-2

LSC WATERSHED PROGRAM UPDATED MMP

LOWER SILVER CREEK WATERSHED PROJECT

UPDATED

MITIGATION AND MONITORING PROGRAM

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Summary

This updated Mitigation and Monitoring Program (MMP) addresses changes to the 1999 MMP prepared by the NRCS and is required by the 2001 Lower Silver Creek Plan Modifications. The updated MMP focuses on the creation of on-site jurisdictional waters and wetlands and on upland plantings. The goal of this MMP is to provide adequate compensation for project impact within the US Army Corps of Engineers jurisdictional waters and wetlands and to about 2 acres of upland trees and shrubs. All mitigation areas will be created on the project site as an integral part of the project design.

A main feature of the MMP is the creation of a minimum of 12 acres of jurisdictional waters (including wetlands) that will develop within a "sediment transport channel" sized to mobilize and transport sediment at an ecologically relevant frequency. It is the relatively frequent occurrence of erosion and deposition during storm events that will shape and reshape the area and over time lead to a channel in dynamic equilibrium that provides open water, floodplain and wetland habitat.

Other elements of this MMP are:

- Approximately 7 acres of upland habitat along the length of the project to add foraging habitat, nesting sites, cover and perches for wildlife and connect with the patches of vegetation existing upstream (at Lake Cunningham) and downstream (Coyote Creek).
- Revegetating the channel invert and slopes with desirable native species to provide erosion and weed control.

Also described in the MMP is the creation of approximately five acres of riparian and shaded riverine aquatic habitat (SRA) habitat mainly to provide shading to the base-flow channel and improve wildlife habitat conditions. The riparian/SRA habitat is an integral part of the Lower Silver Creek Watershed project. Because it is not associated with any project impact, it is not proposed as mitigation for this project but would be considered as an enhancement per the District's Policy E-1.

1. Background and Purpose of this Update

In February 1999, the Natural Resource Conservation Service (NRCS) submitted a Mitigation and Monitoring Program (MMP) for supporting the Lower Silver Creek Watershed Project individual permit application pursuant to section 404 of the Clean Water Act. Constraints identified during the detail design as well as suggestions made during coordination with the Regional Water Quality Control Board, pursuant to the section 401 Water Quality Certification have prompted the Santa Clara Water District (District) to make revisions to the design proposed in the 1999 application (known as the 1998 Plan Update). The project modifications required that the February 1999 Mitigation and Monitoring Program be updated.

This MMP addresses two specifically different requirements of the Project. The first requirement is of a regulatory nature and is to provide adequate compensation for the disposal of fill in waters of the US (per section 404 of the Clean Water Act) and associated wetlands, as well as, for the temporary loss of upland trees and shrubs along the creek (per section 1600 of the California Fish and Game Code). The second requirement is not required by environmental regulations, but is related to District Ends Policy E-1, that states that mitigation, enhancements, or restorations are implemented when determined appropriate by the District's Board. Therefore, the MMP includes additional environmental enhancement and created riparian habitat areas that are an integral part of this project and were approved by the District Board of Directors on December 19, 2000.

2. Project Description

A. Location

Lower Silver Creek, a 4.58-mile tributary of Coyote Creek, is located in the eastern portion of the City of San Jose and the adjacent unincorporated area of Santa Clara County (Figure 1 – Location Map).

B. Summary of Overall Project

A large portion of the Lower Silver Creek project area is urbanized and includes residential, commercial and industrial development. The current channel is man-made and has many bank stabilization and flood control features. It was constructed in the early 1950's as a means to reclaim wetland areas for agriculture around what is presently Lake Cunningham. Over the last 18 years, the Lower Silver Creek Watershed project underwent a number of changes as summarized below.

1983 Recommended Plan

In 1983, a watershed plan was prepared under the authority of the Watershed Protection and Flood Prevention Act. The lead federal agency was the NRCS (at that time known as the Soil Conservation Service), and participating local agencies were the District and Guadalupe Coyote Resource Conservation District. This plan is referred to as the 1983 Recommended Plan.

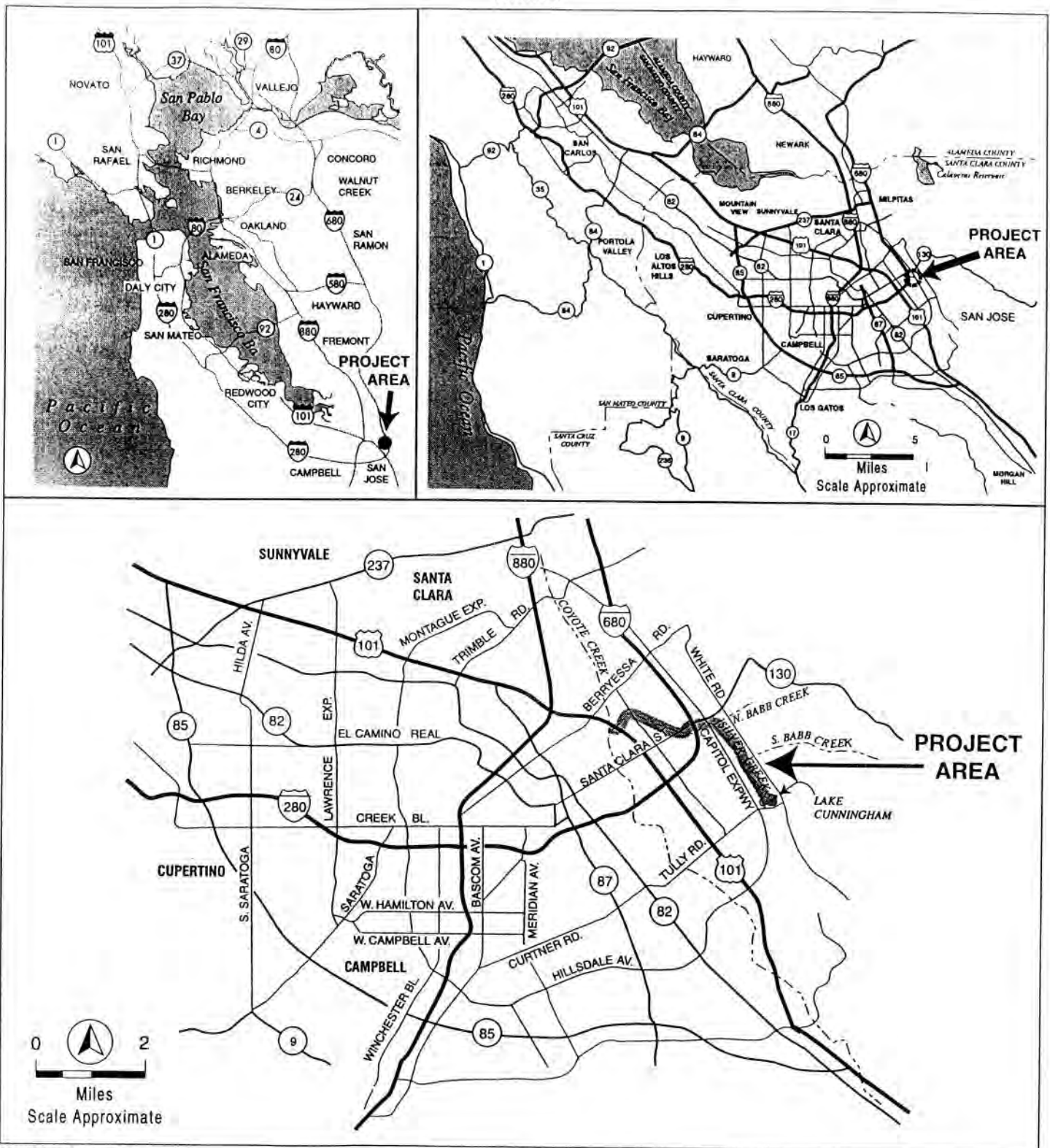
The project envisioned in the 1983 Recommended Plan consisted of approximately five miles of channel modifications, including approximately 0.9 miles of excavated earthen channel and over three miles of newly constructed or retrofitted concrete-lined channel.

In March 1991, the application for a U.S. Army Corps of Engineers (Corps) permit was withdrawn because of concerns expressed regarding the amount of concrete hardscape included in the project plan. Subsequently, the 1983 Recommended Plan was modified by taking into account environmental concerns from federal, state, and local resource and regulatory agencies, as well as, those of environmental groups.

1998 Plan Update

The 1983 Recommended Plan was subsequently modified by the 1998 Plan Update. The purposes and objectives of the 1998 Plan Update were the same as for the 1983 Recommended Plan, but incorporated the following mitigation measures and enhancements.

- Increase the amount of riparian and/or upland habitat along the sides of and in the Lower Silver Creek channel while continuing to provide the same level of flood protection;
- Make the channel potentially more attractive to fish by including a defined low-flow channel for all new channel work (does not include retrofitting existing structures that will not be modified), and the aforementioned riparian habitat potentially cooling the water;
- Improve the channel's visual appearance (i.e., reducing the amount of concrete channel);
- Reduce the amount of concrete channel compared to the 1983 Recommended Plan;
- Enhance the value of wetland vegetation.



SOURCE: EIP Associates

LOWER SILVER CREEK WATERSHED PROJECT
1998 PLAN UPDATE INITIAL STUDY/ENVIRONMENTAL ASSESSMENT
FIGURE 1: REGIONAL LOCATION MAP

2001 Plan Modifications

The 2001 Plan Modifications include changes to the general cross-sections as well as additional environmental enhancements. A complete description of the 2001 Plan Modifications is provided in the [draft] Addendum to the Initial Study/Negative Declaration and Environmental Assessment/Finding of No-Significant Impact (SCVWD 2001).

Cross-section Changes

As part of the 2001 Plan Modifications, the cross-sections along most of the creek would be altered by moving the maintenance road above the channel invert, thereby allowing for the construction of a sediment transport channel and the creation of a naturally formed base-flow channel in all earthen bottom channel sections. These modifications are described below and illustrated for each reach and sub-reach in typical cross sections provided under Attachment 1.

Maintenance Road. The 1998 Plan Update would be modified to construct the creek maintenance road above the channel invert rather than in the bottom of the channel. Removing the maintenance road from the channel bottom allows for the construction of the sediment transport channel.

Sediment Transport Channel. The 1998 Plan Update (NRCS 1998) included a “low-flow” channel throughout the length of the project and a maintenance road directly adjacent to the low-flow channel to provide stability and access for in-stream maintenance activities. During the design review process, these elements raised concerns about the susceptibility of the low-flow channel to excessive sedimentation and the stability of the maintenance road during storm events. A concern was also expressed over the absence of an effective means of transporting sediment downstream and the subsequent requirement for frequent sediment removal activities.

The design review led to the development of an alternative approach to the 1998 Plan Update low-flow channel design. The rationale for proceeding with this alternative approach was that it satisfied the same general objectives that the original design while incorporating a sediment transport channel sized to mobilize and transport sediment and a base-flow channel sized and formed by natural fluvial processes. Given the dynamic nature of Lower Silver Creek and the variability of the factors affecting the creek, it was decided that a design that takes advantage of fluvial processes to achieve ecological restoration would be more effective than a design that relies on structural means and regular maintenance.

The sediment transport channel and naturally formed base-flow channel approach actually depends on the natural processes of erosion, deposition, and sediment transport. In this regard, the short-term success of the proposed design is probably less predictable than that of the 1998 Plan Update. However, long-term success is much more likely for this process-based approach as the habitat that develops will be appropriately sized and distributed in Lower Silver Creek by the natural processes in the channel.

The sediment transport channel will be designed so that sediment will be mobilized during flow events with return intervals that are ecologically relevant (i.e. occur frequently enough to maintain habitat diversity and complexity). It is the relatively frequent occurrence of erosion and deposition during storm events that will shape and reshape the area during inundated and base flow conditions and over time lead to a channel in dynamic equilibrium that provides open water and wetland habitat. Large storm events will flow out of the sediment transport channel. This will dissipate the energy associated with these higher flows and help maintain a more appropriately sized open-water habitat area within the base-flow channel.

As shown in the attached cross-sections, the proposed design will be implemented in varying degrees to accommodate the range of right of way availability in each project sub-reach. It should be noted that the this design approach will be the most effective in areas with relatively wide right of way because a larger in-channel “floodplain” will allow more of the energy associated with high flows to be dissipated.

The sediment transport channel concept will be applied to all earth-lined sub-reaches. In concrete-lined sections (Reaches 2, 3b, 4a) a fixed low-flow channel will be designed to connect with the sediment transport channel so that base flows are uninterrupted. Where feasible, this concrete low-flow channel will be designed to optimize sediment transport in concrete-lined sections. However, the base flow will be interrupted as it runs into some concrete box culverts (i.e. King and McKee intersection, I-680, Story Road) or over concrete slabs (i.e. US-101). At these crossings, waters are expected to flow over the concrete surface and flow back into the sediment transport channel at the downstream end. Box culverts at Sunset Avenue, Alum Rock Boulevard, Jackson Drive and Capitol Expressway will be retrofitted during project construction to allow for continuity of base flows.

C. Responsible Party

The responsible party for this Mitigation Program is the Santa Clara Valley Water District, represented by Mr. Marc Klemencic, Assistant Operating Officer of the Coyote & Uvas/Llagas Watersheds Office of the District. This unit is located at 5750 Almaden Expressway, San Jose, California, 95118-3686.

Questions regarding technical aspects for this MMP should be directed to René Langis Ph.D., biologist for the Coyote Watershed Program, Santa Clara Valley Water District, 2471 Autumnvale Drive, San Jose, CA 95131, (408) 586-0110.

D. Jurisdictional Areas to be Filled

The project impacts to Corps and California Department of Fish and Game (CDFG) jurisdictional areas result mostly from grading and the reconfiguration of the six channel reaches, not from the placement of fill. A total of 4.7 acres of wetlands and 4.1 acres of open water are within the Corps' jurisdiction (Table 1). The wetlands within the project area occur exclusively inside the banks of Lower Silver Creek. Emergent wetland vegetation and other wetland plants are growing along the low-flow channel and at varied distances upslope. The limit of US Army Corps of Engineers (Corps) jurisdictional waters was determined by direct field observation and an analysis by USDA's Unit Hydrograph Model TR-20 for the @ 2.3 year discharge.

For base map showing Corps verified jurisdictional area(s) see companion report "Identification of Waters of the U.S. Jurisdictional Delineation" prepared by the NRCS (1998).

Table 1:
Corps Jurisdictional and CDFG (California Department of Fish and Game)-Jurisdictional Areas (acres) within Project Footprint ¹

	Area Delineated (ac.)	Area Impacted by Project (ac.)	Proposed Areas (ac.)	Mitigation Replacement Area ratio
CORPS JURISDICTIONAL AREAS				
Wetlands	4.7	4.7	—	
Waters (summer low flow)	4.1	4.1	—	
Total	8.8	8.8	12.7	1.4:1
CDFG JURISDICTIONAL AREAS				
Upland trees and shrubs ²	2.0 ²	2.0 ²	2.0	1:1
Additional top-of- bank plantings			4.0	(landscaping feature)
Riparian/SRA ³	0	0	5.0	(enhancement feature per District Policy E-1)
Total	2.0	0	11.0	

¹ From NRCS. 1998. Lower Silver Creek Watershed Project - Identification of Waters of the U.S. Jurisdictional Delineation.

² Definition and acreage revised from the 4.1 acres of riparian habitat reported in NRCS (1998) and 4.5 acres reported in 1983 EIR/EIS following field verification by the NRCS for the 1999 MMP.

³ SRA: Shaded Riverine Aquatic Habitat.

E. Type, Functions and Values of Jurisdictional Areas to be Filled

Based on the jurisdictional wetland delineation, performed in July 1998, 8.8 acres of jurisdictional wetlands and waters of the United States were identified within the project area, 4.7 acres are wetlands and 4.1 are open water habitat (Table 1). The limit of jurisdictional waters was determined to be the elevation of the ordinary high water (OHW) line, calculated as the 2.3-year probability discharge of 1,340 cubic feet per second at the confluence with Coyote Creek and 700 cubic feet per second at Cunningham Avenue. According to the NRCS, numerous factors were used to determine the OHW line. Stream gauge data, flood history and frequency of inundation were analyzed. Field visits were undertaken to observe inundation, saturated soil, sediment deposition, watermarks and erosion. The corresponding elevations were then transposed to base maps. Construction of the Project would directly impact the all 8.8 acres of jurisdictional waters and wetlands surveyed within the right of way. See companion report "*Identification of Waters of the U.S. Jurisdictional Delineation*" prepared by the NRCS (1998).

Jurisdictional wetlands are typical of wetlands located in Santa Clara County channelized streams. Dominant wetland vegetation species reported during the 1998 wetland delineation included native erect emergent vegetation such as cattails (*Typha angustifolia*, *T. latifolia*) and hardstem bulrush (*Scirpus acutus*), as well as a mix of non-natives and annuals. The non-native/annual mix is dominated by a variety of weedy, non-native annual and perennial grasses and forbs such as common smartweed (*Polygonum lapathifolium*), dotted smartweed (*Polygonum punctatum*), barnyard grass (*Echinochloa crus-galli*), rabbitfoot grass (*Polypogon monspeliensis*), Italian ryegrass (*Lolium multiflorum*), and cocklebur (*Xanthium strumarium*).

Functions and values of these wetlands are generally limited to water quality improvement and wildlife habitat for native and non-native species. Fish include the native prickly sculpin (*Cottus asper*) and three-spine stickleback (*Gasterosteus aculeatus*), as well as the non-native carp (*Cyprinus carpio*). Birds include great egrets (*Ardea alba*), snowy egrets (*Egretta thula*), mallards (*Anas platyrhynchos*), American coots (*Fulica americana*), and gulls. Typical mammals include red foxes (*Vulpes vulpes*), raccoons (*Procyon lotor*), and muskrats (*Ondatra zibethicus*). These wetlands do not support any federally or state listed rare or endangered species. No recreational use, besides bird-watching, is known to occur along the project site.

There is no riparian habitat within the project area. The vegetation survey for Lower Silver Creek indicates that 2.0 acres of upland trees, shrubs and other plants are growing within the channel right of way. Because it is mostly man-made, it is doubtful that Lower Silver Creek ever had any quality riparian habitat. There are few trees existing along the creek at Plata Arroyo Park and Mayfair Park. These trees were presumably planted as part of the park landscaping and include a few eucalyptus and sycamores. Other reaches of the creek have scattered ornamentals species planted near apartments.

3. Goal of Mitigation

The goal of the mitigation for the Lower Silver Creek Watershed Project is to replace wetland habitat and upland vegetation affected by flood control construction with higher quality native plantings. The project also will provide erosion and weed control within the channel and banks, as well as, create some additional riparian habitat where appropriate in consistency with the District policy of improving the natural habitat when economically feasible.

The mitigation objectives for this project are:

- Create **12.7 acres** of jurisdictional wetlands and open water habitat within **the sediment transport channel**. Because the sediment transport channel and the naturally formed base-flow channel will be a dynamic element of the overall flood control channel, especially for the first few years after implementation of the project, it is difficult to predict the actual areas of emergent wetlands and open water habitat. The actual configuration of wetlands and open water will depend largely on the hydrology in the watershed after construction and erosion/deposition process, therefore several years might be necessary for the naturally formed base-flow channel to achieve a dynamic equilibrium. The naturally meandering base-flow channel will likely form within the sediment transport channel (which will vary between 20 and 60 feet in width depending on available right of way) following the general model of natural channel formation. Storm flows will erode and excavate bed materials from some locations of the sediment transport channel and deposit them in others and different species of wetland vegetation will colonize these “new surfaces”, as they become available. Based on field observations and a recent District study (Rankin 2000), it is expected that emergent wetlands will colonize the appropriate areas of the sediment transport channel as early as one to two years after channel excavation.
- The District maintenance staff will need to control the establishment of woody vegetation (e.g. willows and box elders) in the sediment transport channel to meet the project’s tight flood conveyance requirements. Removal of target woody vegetation would be combined with removal of invasive species, such as the giant reed (*Arundo donax*), which might invade the newly established wetland areas. Removal of target vegetation would follow the methods and Best Management Practices (BMPs) described in the District Stream Maintenance Program (SMP). Target woody vegetation consists of native riparian species such as willows and box elders and non-natives such as eucalyptus. The woody riparian vegetation removed is comprised of seedlings and saplings no greater than 2” in diameter at breast height (at height of 48” dbh) for herbicide application and 6” for hand removal methods. Large stature, mature vegetation is not removed. Herbicide application and hand removal would be generally conducted once every year during the July 1st to October 15 period.

- Mitigate 2.0 acres of upland trees and shrubs to be removed during construction by establishing approximately **2 acres of self-sustaining native upland plantings**. When added to the approximately 4 acres of other top of bank native planting, this would provide a vegetated corridor along most of the length of the project that would add foraging habitat, nesting sites, cover and perches for wildlife as well as connect the ecological patches of riparian vegetation existing at Lake Cunningham and Coyote Creek. Self sustaining upland plantings are located in Reaches 1a, 1d, 3a, 3e, 3f and 6b will require a minimum of three years of irrigation. However in narrow sections, where upland planting areas will be cut-off from the groundwater table by floodwall foundations or gabions, permanent irrigation might be required. Upland plantings are expected to attain full canopy development within 10 to 15 years.
- Provide **erosion and weed control** by revegetating the channel slopes, gabions and floodplain with desirable native species. Prior to final revegetation, a hydroseed mix of grasses and forbs will be applied to the entire project area. However, as described under the first bullet, the sediment transport channel will be revegetated through volunteer wetland species.

As an added habitat enhancement, per District Policy E-1, the District would also create approximately five acres of shaded riverine aquatic habitat (SRA) and riparian habitat. SRA would be installed in all earth bottom reaches where flood conveyance capacity can accommodate the higher roughness associated with SRA plantings (i.e. Reaches 1, 3, 4, 5 and 6). The SRA will consist of a 5 feet wide bench of willows and cottonwoods located on the south/east [right] bank to optimize shading of the base-flow channel. In earthen channel sections, the SRA will be extended to the top of the bank forming a wider riparian habitat.

The SRA would shade the base-flow channel to lower heat gain, provide a source of energy input to the creek and provide low cover for wildlife moving along the creek corridor. The total area of SRA formed would be approximately 1.5 acres and the riparian habitat would reach approximately 4 acres. The SRA is expected to have a developed canopy within 5 years and depend on the existing ground water table instead of irrigation. Although not required to mitigate project impacts, the SRA/Riparian habitat would improve overall habitat value.

4. Success Criteria

A. *Target Function and Values*

In-Channel Corps Jurisdictional Habitat (Wetlands and Open Water)

The created jurisdictional habitat to be created within the active sediment transport channel will provide a highly dynamic system creating open water habitat within a continuous base-flow channel and wetland and emergent wetland habitat adapted to a variable microtopography. Sediment will be mobilized during storms and form sediment bars with sufficient varying elevations to result in an assemblage of emergent and non-emergent wetlands. Because the application of the sediment transport channel concept in a constricted urban setting such as Lower Silver Creek is innovative, success criteria will be linked to its main function, which is to effectively move sediment through the system while providing open water, floodplain and wetland habitat.

Non-native wetland species are diverse and common in Santa Clara County flood control channels and cannot be effectively controlled; therefore, weed control efforts will be concentrated on the more ecologically significant and invasive giant reed.

Final (Year 10) success criteria associated with the created jurisdictional habitat are:

- Open water habitat is provided within the base-flow channel along the entire project length, except under exceptionally prolonged drought conditions;
- Wetland vegetation with a dominance of obligate, facultative wetland or facultative plant species is established according to channel microtopography (except in severe drought years or following catastrophic flood event). These wetlands should establish over most of the channel area.

In addition, the following performance criteria are added to measure trends toward channel stability and establishment of appropriate wetland habitat:

- Channel sedimentation does not cause channel realignments that would jeopardize adjacent and downstream plantings on SRA bench and channel banks;
- Localized erosion or scour does not jeopardize the stability or function of SRA bench, channel banks and floodplain;
- The sediment transport channel will be kept free of significant stands of giant reed.

Upland Trees and Shrubs

- By year 5, all self-sustaining planted stock (trees and shrubs) must have either 70 percent survival or the revegetation sites must have an absolute woody vegetation canopy cover of 30 percent or greater within a specific sub-reach planting site.
- At year 10, the average absolute woody vegetation canopy cover of trees and shrubs must show a steady trend towards 70 percent or greater, and no less than 50 percent absolute woody vegetation canopy cover of trees and shrubs species is to occur at any revegetation site.

Because of some planting areas could be isolated from the groundwater table by floodwall foundations or gabions, permanent irrigation will likely be necessary to meet canopy cover goals are to be reached. In other areas, plants are expected to become self-sustaining three to five years after planting.

SRA and Riparian Habitat

- By year 5, all self-sustaining planted stock (trees and shrubs) must have either ^{80% (CRF)} 70 percent survival or the revegetation sites must have an absolute woody vegetation canopy cover of 30 percent or greater within a sub-reach planting site.
- At year 10, the average absolute woody vegetation canopy cover of trees and shrubs must show a steady trend towards 70 percent or greater, and no less than 50 percent absolute woody vegetation canopy cover of trees and shrubs species is to occur at any revegetation site.

Dedicated Conveyance Area

Although intended as native grass community, this habitat type will be regularly mowed to maintain design flood conveyance and is not expected to provide any specific wildlife use other than for food and loafing. The primary goal of the revegetation will be to provide erosion control in the higher flow, non-jurisdictional subsection. No mitigation credits are requested for these areas, therefore, no success criteria are proposed.

Vegetated Gabions

The primary goal of the vegetation on gabions is to provide higher aesthetic value and minimize heat reflection, therefore, no mitigation credits are requested from these plantings and no success criteria are proposed.

B. Target Hydrological Regime

Jurisdictional areas, as determined by the Corps' definition of the Ordinary High Water mark, should approximately correspond to the area of the sediment transport channel. The development of hydric soil conditions and establishment of wetland vegetation is dependent on ponding or water saturation. Therefore, the target hydrological regime will follow the Corps 1987 Wetland Delineation Manual definition of seasonal wetland hydrology as conditions that provide inundated or saturated soils for a minimum of 12.5 percent of the growing season (or 45 consecutive days) in most years.

Observations of Lower Silver Creek, conducted in October 2000, showed that water flows in the low-flow channel under dry conditions. Minimal flow measurements of 3 cubic feet per second were made at the upstream end of the project alignment and of 8 cubic feet per second at the confluence with Coyote Creek. To provide functional open water habitat and account for possible drought years, flowing water must be present in the base-flow channel for a minimum of 10 months in most years.

C. Target Jurisdictional Acreages

Target acreages for jurisdictional and non-jurisdictional areas are provided in Table 1.

5. Proposed Mitigation Site

A. Location and Size of Mitigation Area

This project is self-mitigating since mitigation measures (revegetated areas and sediment transport channel) are an integral part of the project. In consequence, the mitigation areas are distributed along the entire project footprint from the confluence with Coyote Creek to Lake Cunningham. Mitigation areas will cover a total area of approximately 24 acres.

B. Ownership Status

The mitigation areas are located within the Santa Clara Valley Water District's right of way except for limited areas of Reach 3 and Reach 6 where permanent easements or right of way would be purchased.

C. Existing Functions and Values of Mitigation Areas

Mitigation will be conducted on the project site. For description of functions and values under existing conditions see Section 2 E, Type, Function and Values of Jurisdictional Areas.

D. Present and Proposed Uses of Mitigation Area

The mitigation area is primarily used for flood control purposes. Under the Project, this area will continue to be used for flood protection but will also provide natural habitat functions as well as aesthetic and recreational values for residents of the east San Jose. Recreational values would however be subordinate to habitat goals as they would be limited to passive activities such as wildlife observation, nature walks, etc., from access areas such as Plata Arroyo Park and Mayfair Park. In addition it is anticipated that outdoor classroom activities would be conducted in creek-adjacent schools (i.e. Mathson Middle School, Ocala Middle School and Rogers Elementary).

E. Present and Proposed Uses of Adjacent Areas

The mitigation sites border residential, commercial, industrial and recreational properties (City Parks). No change in neighboring land uses is anticipated.

6. Implementation Plan

A. Rationale for Expecting Implementation Success

Wetlands and other jurisdictional areas will be established or reestablished within the existing project area under known hydrological and soil conditions. Information collected to this date indicates that conditions are favorable to a successful implementation of the mitigation project if appropriate installation measures are followed.

Hydrology data available at this time shows that hydrological conditions can adequately support the Project mitigation goals. Groundwater elevation is currently adequate to provide wetland hydrology along Lower Silver Creek. In addition, data collected in October 2000 indicates that there is sufficient surface water flowing in the creek during the dry season to maintain open water habitat year-round. Hydrological modeling results indicate that during a 1 percent flood event (100 year event), flow velocities would only be marginally erosive and therefore would be unlikely to cause substantial scour, even during the first few years following construction.

Preliminary engineering studies have shown that soils conditions along specific sections of the project alignment are less than ideal for planting. For example, soils in the lower part of Reach 1 and most of Reach 3 are characterized by dense and poorly drained soils. Dense soils can hamper root penetration resulting in shallow rooting systems. Many riparian species require deep roots to acquire water during dry periods. Without adequate amendments, plantings in this section are likely to exhibit stunted growth and high mortality. To improve planting area conditions, 2 to 4 feet of native topsoil will be removed and replaced with coarse topsoil. In addition, species known to be tolerant of clay soils will be selected for planting. Reach 6 soils have been shown to be ultramafic (i.e. possess severe calcium imbalances, high pH (up to pH 9.1), high magnesium, boron, and sodium). The plantable surfaces of Reach 6 will either require plants that are adapted to ultramafic soils as shown in table 3 or their soils will need to be improved through addition of topsoil, organic matter, and/or gypsum and sulfur as required. Other reaches of the project have acceptable soil conditions.

B. Responsible Party

The Santa Clara Valley Water District, represented by Mr. Marc Klemencic, Assistant Operating Officer of the Coyote & Uvas/Llagas Watersheds Office of the District would be responsible for implementing the mitigation project. Mr. Klemencic's unit is located at 5750 Almaden Expressway, San Jose, California, 95118-3686. He can be reached at (408) 265-2607, extension 2084.

C. Site Preparation

Site Design/Grading Plans

Design plans and grading details will be prepared as part of the final bidding package.

Soil Preparation

Soil preparation details will be prepared as part of the final bidding package.

Irrigation Plans

Detailed irrigation plans will be prepared as part of the final bidding package.

Planting Areas

In-Channel Jurisdictional Habitat (Wetlands and Open Water)

Jurisdictional habitat will be created exclusively within the sediment transport channel (see cross-sections, Attachment 1). Native emergent wetland species, such as those presented in Table 2, are expected to naturally colonize this area as well as locally common non-native species. To maintain the channel's flood capacity woody vegetation will not be allowed to establish in the sediment transport channel.

Upland Plantings

The upland revegetation sites will be planted along the top of the channel banks with a composition of plants species that are typically found between mid slope and top of the bank in the lower reaches of the Lower Silver Creek watershed. Plant species will be combined to form a complex structure including an overstory, midstory and understory canopies, where possible. The overstory will include trees such as valley and coast live oaks. The mid-story canopy would include box elder, buckeye and blue elderberry. Native shrubs such as California rose and Coyote brush will comprise the dominant understory.

In some space-restricted planting areas, where floodwalls are combined with gabions, such as along Reach 3c, 3d, most of reaches 4, 5 and 6, plantings would be limited to native grasses and/or shrubs such as snowberry or coffeeberry (in ultramafic soil areas) and will likely require permanent irrigation.

SRA/Bank Riparian Habitat

SRA and bank riparian habitat, which not offered for mitigation on this project but as an enhancement, will be located between the top of right bank and the toe of the slope. Plant species will be combined to form a complex structure of different canopy layers. Overstory plantings will include, California sycamore, coast live and valley oaks, and Fremont cottonwood. Mid-story layer will include box elders, California buckeyes, blue elderberries and arroyo willows. Mugwort, marsh baccharis, coyote brush, California rose, California blackberry common snowberry, and western aster will dominate the understory.

The lower section of Bank Riparian Habitat (as well as limited section of gabion-lined reaches) will provide the SRA habitat and will be planted immediately adjacent to the sediment transport channel. The SRA habitat will provide shade and overlying cover to the sediment transport channel and the base-flow channel depending on location of meanders. Typical species will include Fremont cottonwood, willows, mugwort, and creeping wild rye.

Dedicated Conveyance Area

A section of the channel would be dedicated to conveyance and will be maintained to allow only short grasses and forbs through the application of a hydroseed mix including California brome, meadow barley, three-week fescue, and other herbaceous species appropriate to the watershed.

Vegetated Gabions

In sections where right of way constraints do not allow for earth-lined banks, gabions must be used to prevent bank failure. This area will be covered with native grasses and vines.

The conceptual cross-sections (Attachment 1) and the revegetation plans (Attachment 2) illustrate the typical location of each habitat type for each sub-reach. In most reaches, the top of bank tree canopy will be only one tree wide due to the right of way constraints. Wider corridors of trees and shrubs will be planted along reaches 1a, 1d, 3a, 3f and 6b.

The trees and shrubs are planted to shade the base-flow channel to help reduce heat gain between 10:00 AM and 3:00 PM and provide cover for fish. The vegetation would also provide a food source for invertebrates. Native emergent freshwater marsh vegetation is expected to colonize most of the sediment

transport channel, except for deeper areas of the base-flow channel. Trees and shrubs planted on top of banks and on the south bank slope will serve as a corridor for birds and small mammals between Coyote Creek and the upstream reaches through Lake Cunningham Park.

Soil analyses revealed interleaved high clay and coarse loam or sand along portions of several reaches. These soils are most susceptible to compaction by grading equipment. Heavy equipment will be kept away from planting locations where topsoil or soil amendments have been introduced over the graded surface, or where planting wells have been prepared. This is to avoid either compaction or unwanted dispersal of topsoil.

Areas disturbed during site preparation will be seeded with a native seed mix, mulched with straw, or treated with erosion control blankets.

Planting Plans

Plant Procurement

The container stock to be installed will be contract grown. Efforts will be made to collect all propagules, first, from the Lower Silver Creek watershed at sites similar to the mitigation areas and, second, from adjacent drainages within the Diablo Range drainage of Santa Clara County, if sufficient supply of propagules for a particular species is not available. Seeds and cuttings will be collected approximately one year prior to installation to allow sufficient time for plants to grow. Plant collection and growth would be monitored by qualified biologists to ensure that healthy and vigorous plants are installed.

A list of proposed plant species is presented in Table 2. In addition, Table 3 presents a list of species that are adapted to the ultramafic soils (calcium imbalanced, high pH, high magnesium) of Reach 6.

Plant Installation

The size of the plant materials to be used will range from seed, rooted and unrooted cuttings, *treepots* (4-inch by 14-inch), *deepots* (2.5-inch by 6-inch) and *treeband* (2.25-inch by 5-inch) container stock. Willow fascines, brush layering, joint planting and other soil bioengineering techniques will be used, where appropriate, to stabilize and vegetate earth channel banks. Trees, shrubs and groundcovers will be established along the tops of banks and along the south-side slope down to the sediment transport channel, as directed by the plans. Conceptual planting plans are presented in Attachment 2. Final planting plans, details, specifications, cost estimates and detailed mitigation maintenance and operation plans will be prepared concurrently with the preparation of the phased structural construction drawings.

Plants will be installed in fall or spring following channel excavation. Planting holes will be irrigated before and after planting. Amendments will include the addition of coarse textured soils in Reach 1a. A 3-foot diameter irrigation basin with a 4-inch high lip will be constructed around each plant. The proposed planting density is 450 trees and shrubs per acre, which is an average density for comparable restoration sites given soil and water conditions. Some herbaceous species will be planted at a density of 650 planting basins per acre. Relative amounts of each species will be determined as part of the preparation of plans and specifications.

Irrigation

Plants will be irrigated with a sub-surface system to avoid potential damage by rodents and vandals. Although efforts will be made to promote self-sufficiency within 2 to 3 years, specific structural constraints, such as the presence of floodwall or gabions may dictate the use of permanent irrigation for upland plantings.

Weed Control

Weeds around individual trees and shrubs will be controlled with wood chips or rice straw mulch or weed control fabric. Mulch will be applied so that it does not contact plant stem. Outside of planting basins,

weeds will be controlled by mowing, post emergent herbicide, hand pulling or a combination thereof. Care will be taken to avoid damage to native woody species that may colonize the gap between plantings.

Table 2:
Plant List for Lower Silver Creek

Scientific Name	Common Name	Habitat / Plant Association
Trees:		
<i>Acer negundo</i>	Box elder	Upland/Riparian: Bank and Top of Bank
<i>Aesculus californica</i>	California buckeye	Upland/Riparian: Bank and Top of Bank
<i>Platanus racemosa</i>	California sycamore	Riparian: Bank
<i>Populus fremontii</i>	Fremont cottonwood	Riparian: Bank and SRA
<i>Quercus agrifolia</i>	Coast live oak	Upland/Riparian: Bank and Top of Bank
<i>Quercus douglasii</i> ¹	Blue oak	Upland/Riparian: Bank and Top of Bank
<i>Quercus lobata</i>	Valley oak	Upland/Riparian: Bank and Top of Bank
<i>Salix exigua</i>	Sandbar willow	Riparian: SRA
<i>Salix laevigata</i>	Red willow	Riparian: SRA
<i>Salix lasiolepis</i>	Arroyo willow	Riparian: SRA
<i>Sambucus mexicana</i>	Blue elderberry	Riparian: Bank and Top of Bank
<i>Umbellularia californica</i>	California bay	Upland/Riparian: Bank and Top of Bank
Shrubs and Vines:		
<i>Artemisia californica</i> ¹	California sagebrush	Upland/Riparian: Bank and Top of Bank
<i>Artemisia douglasiana</i>	Mugwort	Riparian: Bank
<i>Aster chilensis</i>	Western aster	Riparian: Bank
<i>Baccharis douglasii</i>	Marsh baccharis	Riparian: Bank
<i>Baccharis pilularis</i>	Coyote brush	Upland/Riparian: Bank and Top of Bank
<i>Baccharis salicifolius</i> ¹	Mule fat	Upland/Riparian: Bank and Top of Bank
<i>Prunus ilicifolia</i> ¹	Holly-leaf cherry	Upland/Riparian: Bank and Top of Bank
<i>Rosa californica</i>	California rose	Upland/Riparian: Bank and Top of Bank
<i>Rubus ursinus</i>	California blackberry	Riparian: Bank
<i>Symphoricarpos albus</i> var. <i>laevigatus</i>	Common snowberry	Riparian: Bank
<i>Symphoricarpos mollis</i> ¹	Creeping snowberry	Upland/Riparian: Bank and Top of Bank

Table 2:
Plant List for Lower Silver Creek (Continued)

Scientific Name	Common Name	Habitat / Plant Association
Grasses and Forbs:		
<i>Bromus carinatus</i> ¹	California brome	Hydroseed Mix
<i>Hordeum brachyantherum</i> ¹	Meadow barley	Hydroseed Mix
<i>Leymus triticoides</i> ¹	Creeping wild rye	Riparian: SRA and Bank
<i>Lupinus succulentus</i> ¹	Arroyo lupine	Hydroseed Mix
<i>Nassella lepida</i>	Foothill needlegrass	Riparian: Bank/Gabions
<i>Nassella pulchra</i>	Purple needlegrass	Riparian: Bank/Gabions
<i>Satureja douglasii</i> ¹	Yerba buena	Riparian: Bank/Gabions
<i>Vulpia microstachys</i> ¹	Three week fescue	Hydroseed Mix
Wetland / Aquatic Species:		
<i>Typha angustifolia</i> ²	Narrow leaf cattail	Emergent Wetland
<i>Typha latifolia</i> ²	Broad leaf cattail	Emergent Wetland
<i>Scirpus acutus</i> var. <i>occidentalis</i> ²	Common tule	Emergent Wetland
<i>Scirpus californicus</i> ^{1, 2}	California bulrush	Emergent Wetland

¹ Additions to MMP plant list (NRCS 1999)

² These species are expected to volunteer

Table 3:
Ultramafic Soil Adapted Species (for Reach 6)

Scientific Name	Common Name	Habitat/Plant Association
Shrubs		
<i>Ceanothus cuneatus</i>	Buckbrush	Riparian: Bank and Top of Bank
<i>Rhamnus californica</i> ³	Coffeeberry	Riparian: Bank and Top of Bank
<i>Toxicodendron diversilobum</i> ³	Poison oak	Riparian: Bank and Top of Bank
Grasses and Forbs		
<i>Eschscholtzia californica</i> ³	California poppy	Riparian: Bank and Top of Bank
<i>Festuca californica</i> ³	California fescue	Riparian: SRA, Bank and Top of Bank
Wetland/Aquatic Species		
<i>Hordeum brachyantherum</i> ³	Meadow barley	Seasonal Wetland
<i>Juncus balticus</i> ³	Baltic rush	Seasonal/Emergent Wetland
<i>Juncus xiphioides</i> ³	Iris-leaved rush	Emergent Wetland

¹ Species with local or regional preference for ultramafic soil substrates in California according to Kruckeberg (1984).

² Serpentine endemic species with the highest fidelity to grow on ultrabasic substrates according to Kruckeberg (1984).

³ Bodenvag plant species, taxa indifferent to serpentine substrates confirmed by Kruckeberg (1984) and/or Franklin & Dyrness 1973.

Construction Inspection

The Santa Clara Valley Water District or the USDA/NRCS will administer the mitigation contract Service as a District or federal contract. An inspector will monitor the contractor to insure full compliance with the project plans and specifications.

Implementation Schedule

Mitigation contracts will be installed reach by reach directly after the completion of the structural contract for that reach. In some cases, certain components (e.g. irrigation mainlines) will be installed by the structural contractor. Irrigation systems may be installed at any time, while container plants will be installed only during certain fall and spring planting periods. Bio-technical plantings, such as willow matting or willow fascines, would be installed during winter, which is the dormant season for willows.

As-built drawings

The mitigation contractor will be obligated to prepare a set of as-built drawings while construction is in progress. All changes in locations of irrigation system components, plants or other mitigation features or changed site conditions will be illustrated on a final as-built drawing set and turned over to the contracting officer for reference. Drawings will show location and boundaries of all mitigation sites and other planting sites (Riparian/SRA and native landscaping).

Establishment period

The contractor will be retained for a three to five-year establishment period to insure proper function of the irrigation systems and to monitor for possible changed site conditions, plant stress or other emergency. The contractor will be responsible for weed control, irrigation system inspection and maintenance, basin repair, herbivore protection, replanting of any dead or dying plant material and assisting in site assessment and joint inspections.

Long-Term Maintenance

The District is responsible for long-term maintenance activities. Most of the revegetation areas are planned to become self-sustaining systems and are not expected to require maintenance past year 5. However, yearly maintenance of revegetation in the higher flow channel inverts and along the sediment transport channel may be required. The revegetation areas will be inspected yearly to identify any potentially significant problems, such as large dead or downed trees or invasion by non-native species. In addition, thinning of planted stock might be required if plant competition and/or density is shown to be detrimental to site development towards meeting the success criteria.

Long-term maintenance associated with the **sediment transport channel** would include the removal of woody vegetation, occasional sediment removal, and bank protection. Sediment removal would be required although the sediment transport channel is designed optimize sediment transport, uncertainties associated with a mostly impermeable watershed as well as the potential for landslides in the upper watershed. The District would only consider sediment removal if flood conveyance capacity is reduced so that water elevation of a 1- percent flood event would reach half of the freeboard height or if localized sediment deposit threatens the alignment of the sediment transport channel. Further information on the project's maintenance requirements is provided in the *Lower Silver Creek Watershed Project Maintenance Plan*.

The **SRA/Riparian area** (which is not a mitigation site for this project) would only require the minimal maintenance such as removal of large debris items (dead trees, shopping carts, etc.) since the project hydraulic modeling accounted for the roughness of a fully developed SRA/Riparian area on the south [right] bank of the creek. Maintenance would also need to include minimal bank repair following potential failures as described in the companion *Lower Silver Creek Maintenance Plan*.

7. Monitoring Plan

A. *Monitoring Methods*

The District will monitor the sediment transport channel and revegetation sites for the ten years following completion of each phase of the project. All revegetation monitoring activities will be conducted by or under the supervision of a qualified biologist while physical processes related to the sediment transport channel will be supervised by an engineer/geomorphologist. Monitoring procedures will be followed to determine overall success of the created in-channel jurisdictional habitat and of the upland plantings. Monitoring transects extending from top-of-bank to top-of-bank will be set up at representative reaches. Permanent photographic stations will be established within and overlooking sections of the project area. Photos will be taken at the same time period in years 1, 2, 3, 5, 7 and 10. Photos will also be taken to document events that could significantly affect the development of the sediment transport channel and the revegetation success such as floods, fire, or vandalism.

Monitoring and reporting would end in Year 10. However, if the final success criteria are not met in Year 10, monitoring will continue on year to year basis until success criteria have been met or an alternative monitoring plan has been prepared and approved by the regulatory agencies (Corps, Regional Water Quality Control Board [RWQCB], and CDFG). Elements to be monitored include:

- Formation of a functional base-flow channel
- Successful development of open water habitat in the sediment transport channel
- Sediment transport/deposition
- Wetland vegetation cover, species composition and wetland indicator status
- Survival and canopy development in upland plantings

Also proposed is a monitoring plan are areas not targeted for mitigation on this project but to provide valuable ecological benefits to the Lower Silver Creek system.

In Channel Corps Jurisdictional Habitat (Wetlands and Open Water)

Because the sediment transport channel process-based design approach will result in a dynamic system, the proposed monitoring and adaptive management program will be critical to the long term success of the project as well as be valuable for design of future similar projects. Therefore channel geometry and vegetation establishment will be monitored for the naturally formed base-flow channel and the sediment transport channel.

Cross-sectional profiles will be measured at permanent monitoring stations in each project reach shortly after construction to assess the magnitude of erosion/deposition of sediment in the sediment transport channel and the development of the base-flow channel. Twenty representative stations will be established, one per sub-reach. Cross-sectional profile measurements (width and depth at each channel stage) would be done in years 1, 2, 3, 5, 7, and 10, as well as dictated by significant "channel-forming" storm events. These cross-sectional measurements will also provide information on the development of the channel's longitudinal profile.

Photo points will also be established at each station to monitor geomorphic patterns and vegetation development. This will provide information that could be used to estimate the roughness in the sediment transport channel and identify areas of overgrowth that could inhibit natural channel forming processes.

The District will install a stage gage and recorder at one of these cross sections (or at a bridge crossing) to collect post project flow information. This would make it possible to determine the magnitude and duration of the flow events that form the base-flow channel.

The development of wetland habitat will be monitored more specifically at the same 20 stations during the summer using methods described in the Corps 1987 Wetland Delineation Manual. Vegetation cover and species diversity will be assessed in years 1, 3, 5, 7 and 10. Wetland hydrology will be determined in years 5 and 10 as part of a formal wetland delineation of the created jurisdictional area. Qualitative or visual observations of hydrology will be made in years 1, 3 and 7. It is anticipated that the wetland portion of the sediment transport channel will meet the vegetation (obligate, facultative wet, or facultative) and hydrology criteria as described in the 1987 Corps Wetland Delineation Manual by the end of the 5-year period.

Upland plantings

As-built landscaping plans will be prepared soon after upland plantings are complete to provide a monitoring baseline at "time = zero." The as-built plans will show all deviations from the planting plans including number of plants installed, planting locations, unplanted areas and any feature not shown on landscape plans.

Plant survivorship will be determined by field counts of at least 10 percent of all planted trees and shrubs. Plantings to be monitored will be randomly selected within each sub-reach. These plants will also be assessed for plant health and vigor and documented by photographs. Plant survivorship will be conducted over the first 5 years or until such time that the growth of plants makes survivorship too difficult to assess. At that time percent cover will become the primary indicator of planting success. Plant survivorship will be recorded by species.

Percent cover will be estimated by the line intercept method (Bonham 1989). Permanent transects will be established (one per distinct monitoring site) to facilitate accurate replication over successive years. At least one transect will be established per sub-reach. Transect location (within sub -reach) will be randomly selected. Photo documentation will be made at each station to monitor quality of canopy development. Tree and shrub cover will be recorded by species.

Bank riparian Habitat (and SRA)

As-built landscaping plans will be prepared soon after upland plantings are complete to provide a monitoring baseline at "time = zero." The as-built plans will show all deviations from the planting plans including number of plants installed, planting locations, unplanted areas and any feature not shown on landscape plans.

Plant survivorship will be determined by field counts of at least 10 percent of all planted trees and shrubs. Plantings to be monitored will be randomly selected within each sub-reach. These plants will also be assessed for plant health and vigor and documented by photographs. Plant survivorship will be conducted over the first 5 years or until such time that the growth of plants makes survivorship too difficult to assess. At that time percent cover will become the primary indicator of planting success. Plant survivorship will be recorded by species.

Percent cover will be estimated by the line intercept method (Bonham 1989). Permanent transects will be established to facilitate accurate replication over successive years. At least one transect will be established per sub-reach. Transect location (within sub -reach) will be randomly selected. Photo documentation will be made at each station to monitor quality of canopy development. Tree and shrub cover will be recorded by species.

Dedicated Conveyance Area

No performance criteria and, therefore, no monitoring are proposed.

B. Long-Term Monitoring

A long-term monitoring program of the revegetation sites was proposed under the 1999 MMP for the life of the project (100 years). Although not a regulatory requirement, long-term monitoring would also be conducted under this updated MMP but would focus on the main project elements. The goal of long-term monitoring is to allow the District, the NRCS and the GCRCD to assess the general condition of the project site and determine the need for additional management.

Monitoring would focus on the stability of the sediment transport channel and the conditions of planted vegetation. Sediment transport channel assessment would include the identification of zones of erosion, incision and sedimentation that could cause channel realignment and threaten the integrity of adjacent or downstream channel/bank stabilization. This assessment would be conducted on a yearly basis and coordinated with regular maintenance inspections.

The condition of all mitigation revegetation sites would be assessed every two to five years mainly to identify sick and dead trees and monitor invasive weeds.

C. Reports

Reports of monitoring results will be submitted following each monitoring event, in years 1, 2, 3, 5, 7 and 10. Any deficiencies will be noted and a remedial plan will be prepared for agency review and approval if project fails to meet success criteria in years 5 and 10 for upland planting areas and year 10 for in-channel Corps jurisdictional habitat mitigation area. The reports will include the names of monitoring personnel, a copy of the Corps permit and 1601 Streambed Alteration Agreement and special conditions and modifications, analysis of monitoring data, photographs for all specified photopoints, maps or plans of monitoring areas and copies of field data sheets.

Mitigation and monitoring reports for Lower Silver Creek mitigation will be prepared between May and October of each year for years 1-3, 5 and 7 with a final report in year 10. Special reports will be prepared for any unforeseen occurrence or for any repair or replacement necessary to bring the mitigation areas to targeted success criteria.

D. Completion of Monitoring Period and Final Report

When the initial monitoring period is complete and after it is demonstrated that the final success criteria have been met, the sponsor will submit a final report and new jurisdictional delineation to the Corps for approval. A site visit to be attended by the Corps, the RWQCB, CDFG and the project sponsors will then be arranged.

8. Contingency Measures

The District is responsible for insuring the integrity and success of the mitigation areas. If success criteria are not met at the end of the 10-year monitoring program, monitoring will be prolonged and remedial actions will be taken with appropriate coordination with permitting agencies. The frequency of monitoring activities will allow the District to identify and correct problems early enough to avoid major failures and increase probability of meeting mitigation goals. Problems and discrepancies from mitigation objectives and applied corrective measures will be documented in the scheduled monitoring reports. It is understood that only the project element associated with the corrective or remedial action would be object of any extension of the monitoring period.

A. Remedial Action

If scheduled monitoring indicate that the year 5 and 10 success criteria for the upland planting area and/or the year 10 success criteria for the in-channel Corps jurisdictional habitat will not be met, a remedial action plan will be prepared and submitted to the Corps, RWQCB and CDFG for approval. The action plan will include a review of the monitoring data, study of possible contributing factors, and description of remedial action. Alternative mitigation sites are not considered at this time since the Lower Silver Creek project site is deemed suitable for habitat revegetation under the proposed implementation plan. Planning of alternative sites or the rearrangement of project revegetation sites will be initiated if it becomes apparent that the final success criteria will not be reached in a foreseeable future.

Depending on the severity of the problem, remedial actions addressing channel configuration could involve the stabilization of the creek banks, addition of rock material to control incision, or removal of sediment, all these are considered to be part of routine maintenance activities. The sediment transport channel is designed to maximize sediment transport, however uncertainties associated with a mostly impermeable watershed as well as the potential for landslides in the upper watershed do not completely eliminate the need for sediment removal. The District would only consider sediment removal if flood conveyance capacity is reduced below the 1-percent flood conveyance design criteria or if localized sediment deposit threatens the alignment of the sediment transport channel.

If remedial action is required, the monitoring schedule will be reset to year zero and would only apply to the mitigation element that is subject to a remedial action. This new monitoring plan would be submitted to the to regulatory agency for approval.

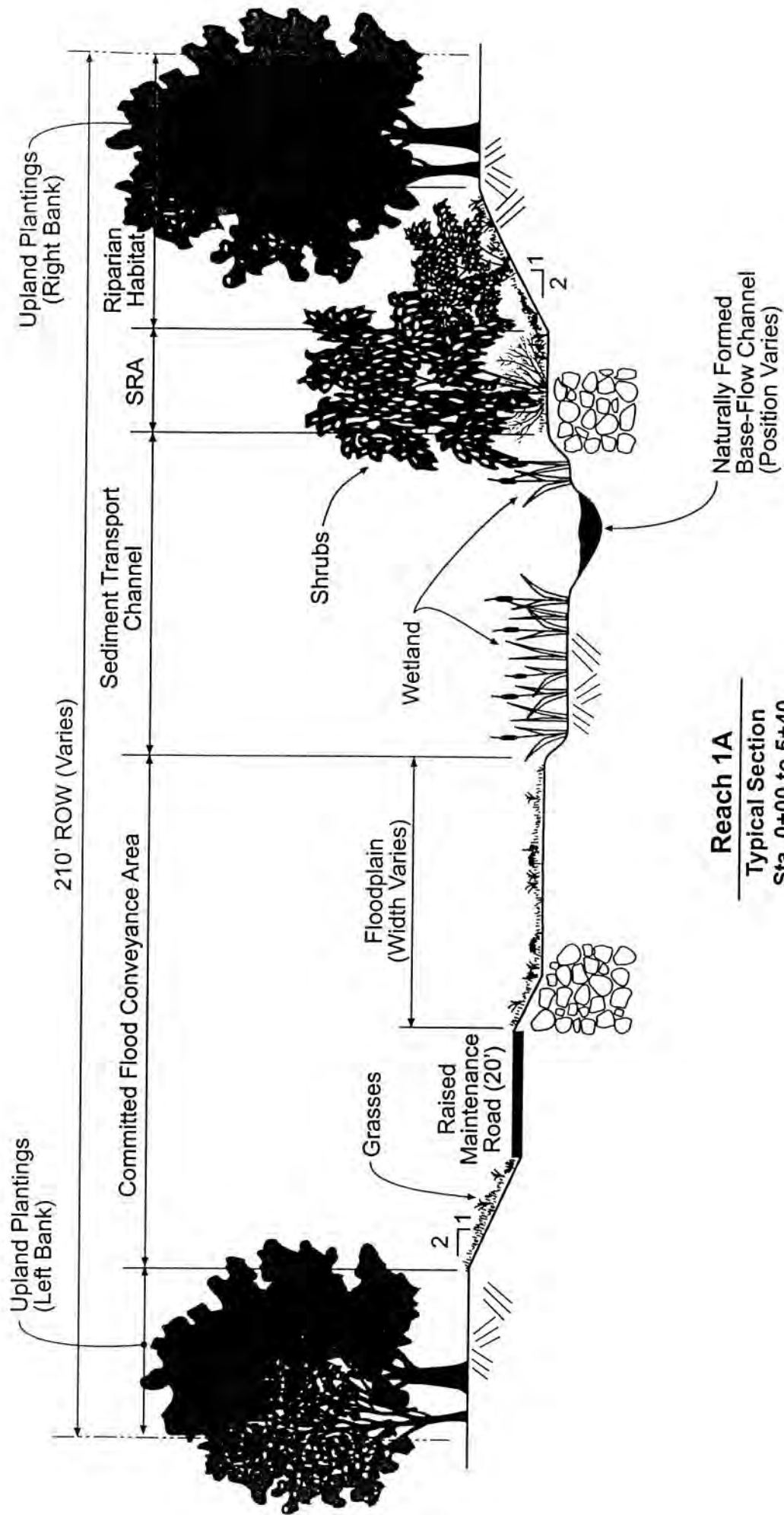
B. Responsible Party.

The responsible party for contingency action is the Santa Clara Valley Water District, represented by Mr. Marc Klemencic, the Assistant Operating Officer of the Coyote & Uvas/Llagas Watersheds Unit of the District. This unit is located at 5750 Almaden Expressway, San Jose, California, 95118-3686.

C. Funding Mechanism

Any required contingency actions will be funded by the same mechanism used to fund the mitigation. This funding consists of existing revenues form property tax allocation and flood control benefit assessments, and debt financing by way of certificates of participation or other borrowing mechanisms.

Attachment 1: Typical Cross-Sections for Reaches 1 through 6



Reach 1A

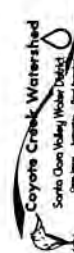
Typical Section

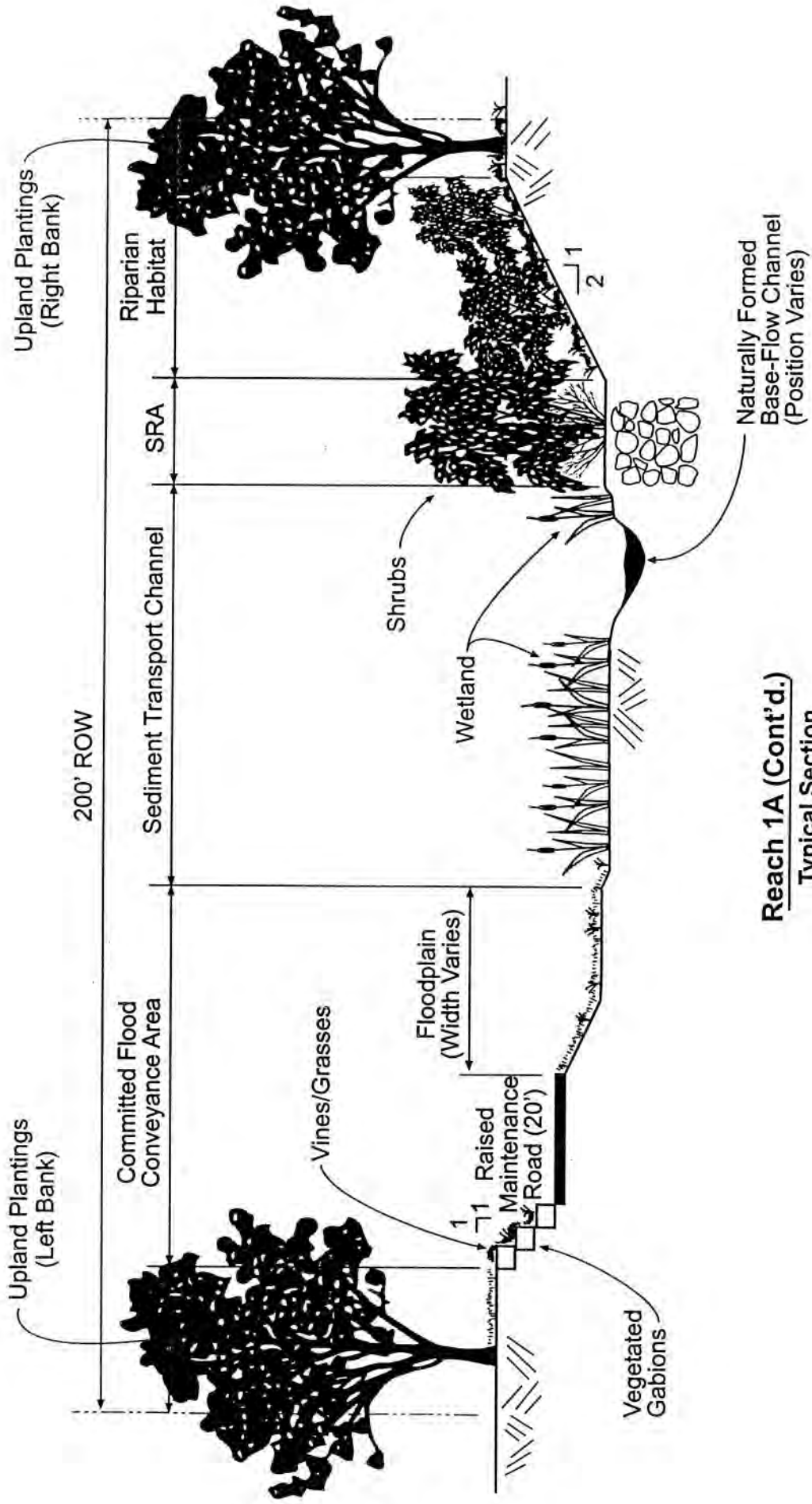
Sta. 0+00 to 5+40

Length = 500'

Earthen Channel

Not To Scale





Reach 1A (Cont'd.)

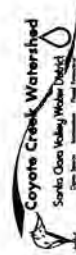
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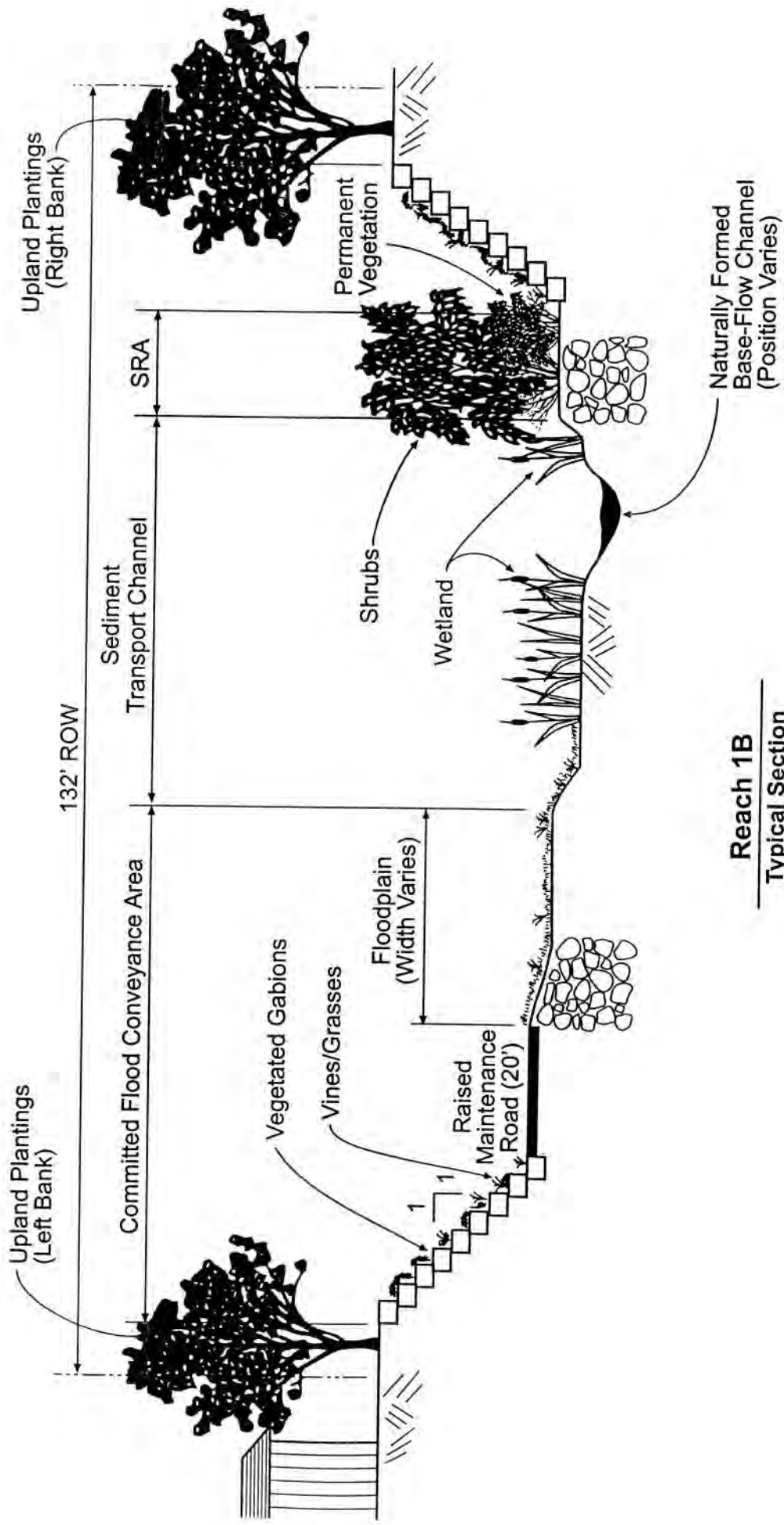
Sta. 5+40 to 9+30

Length = 400'

Earthen Channel/Gabions

Not To Scale





Reach 1B

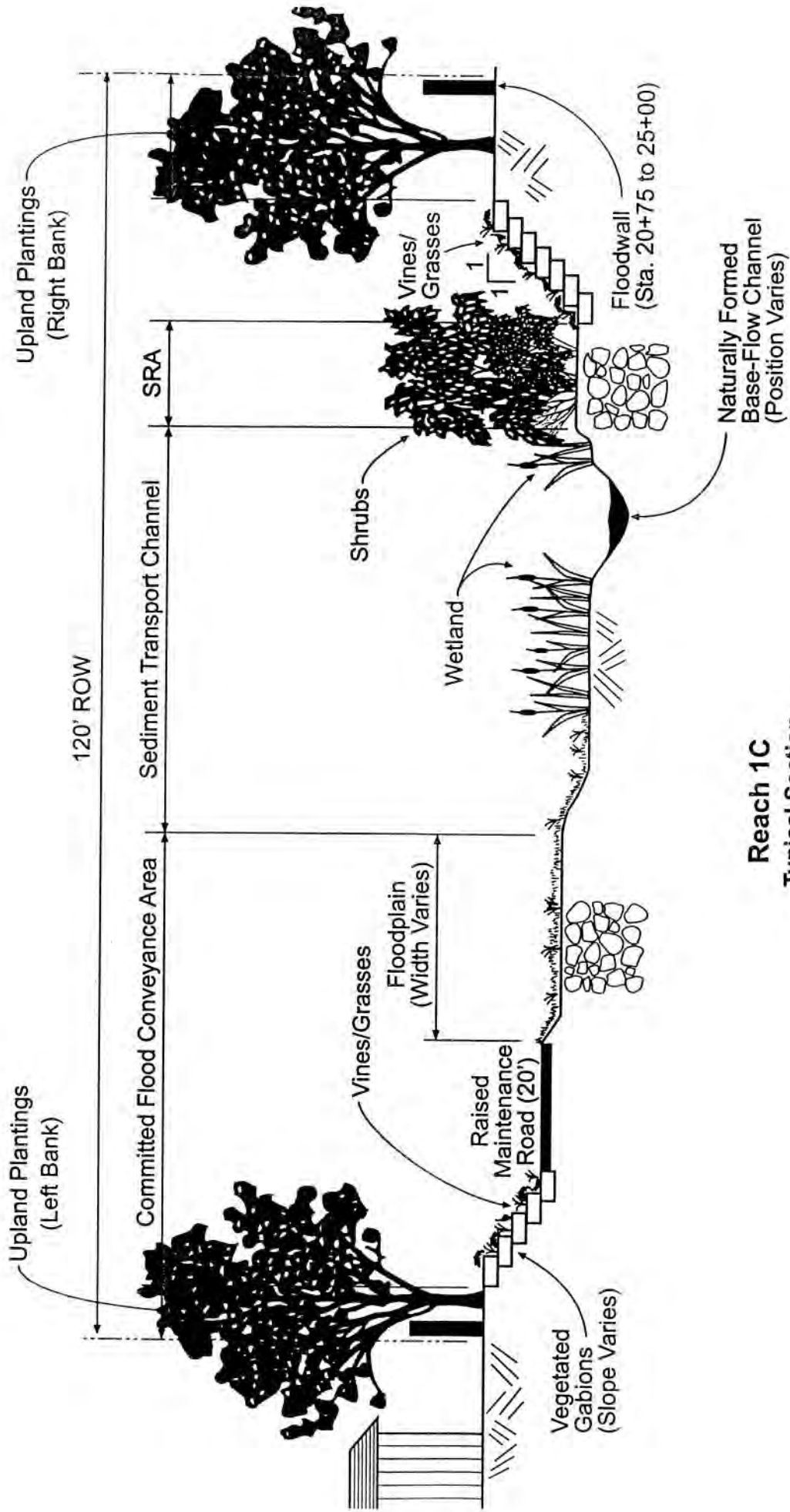
Typical Section

Sta. 9+30 to 13+00

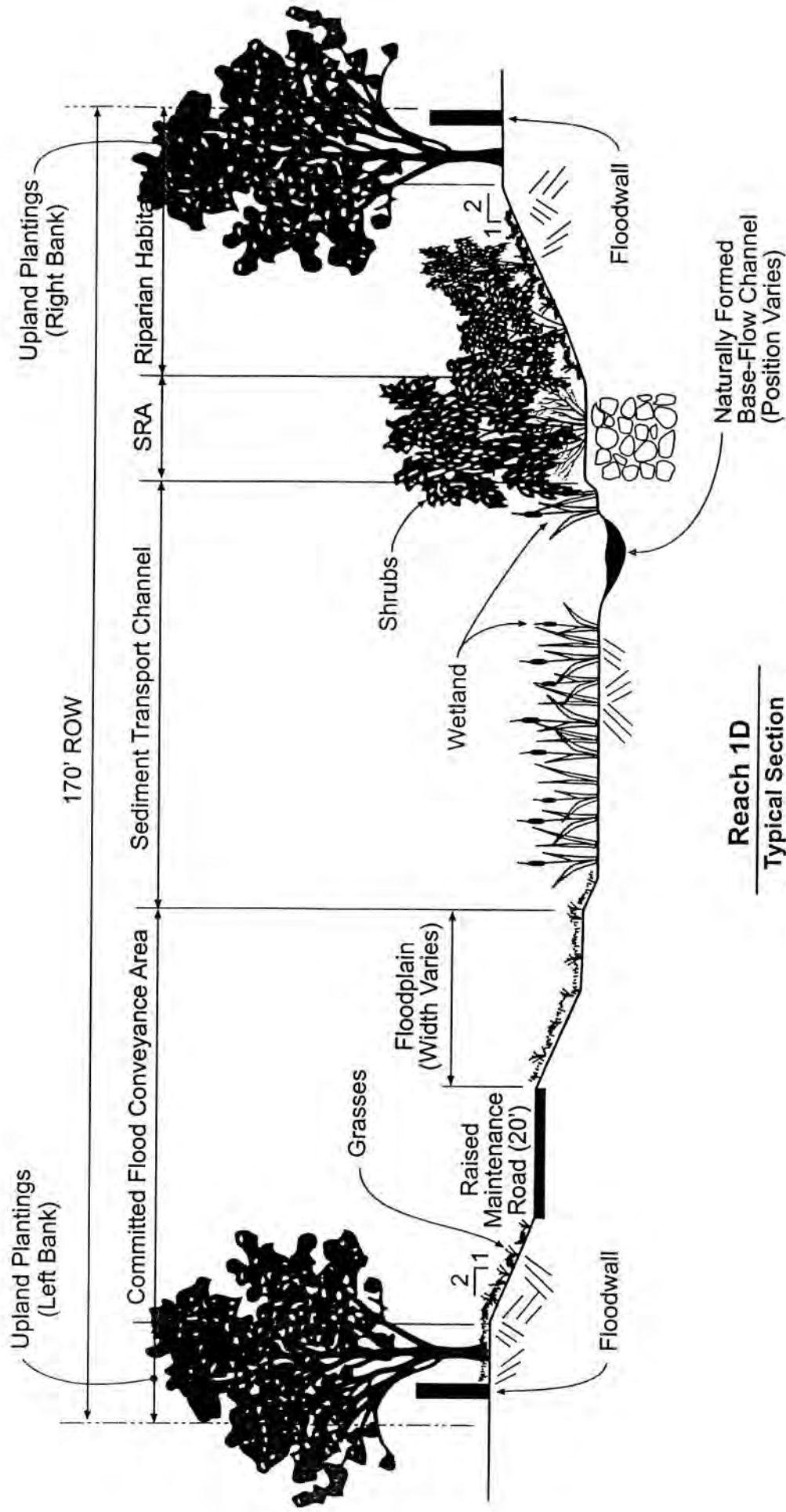
Length = 300'

Vegetated Gabions

Not To Scale



Reach 1C
Typical Section
Sta. 14+00 to 25+00
Length = 1100'
Vegetated Gabions
Not To Scale



Reach 1D

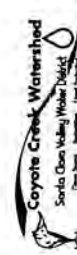
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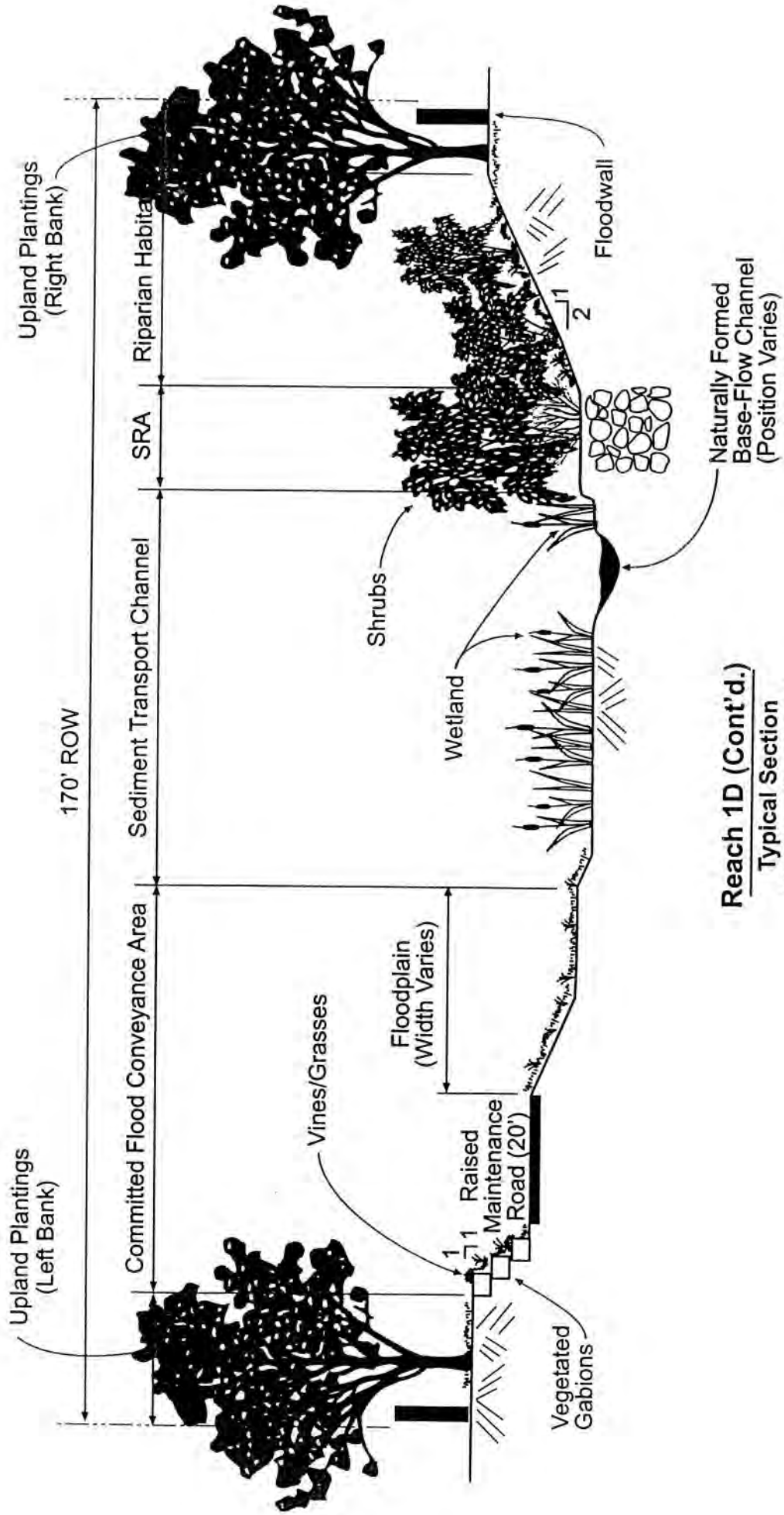
Sta. 26+00 to 32+00

Length = 600'

Earthen Channel

Not To Scale





Reach 1D (Cont'd.)

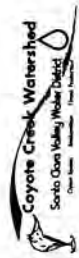
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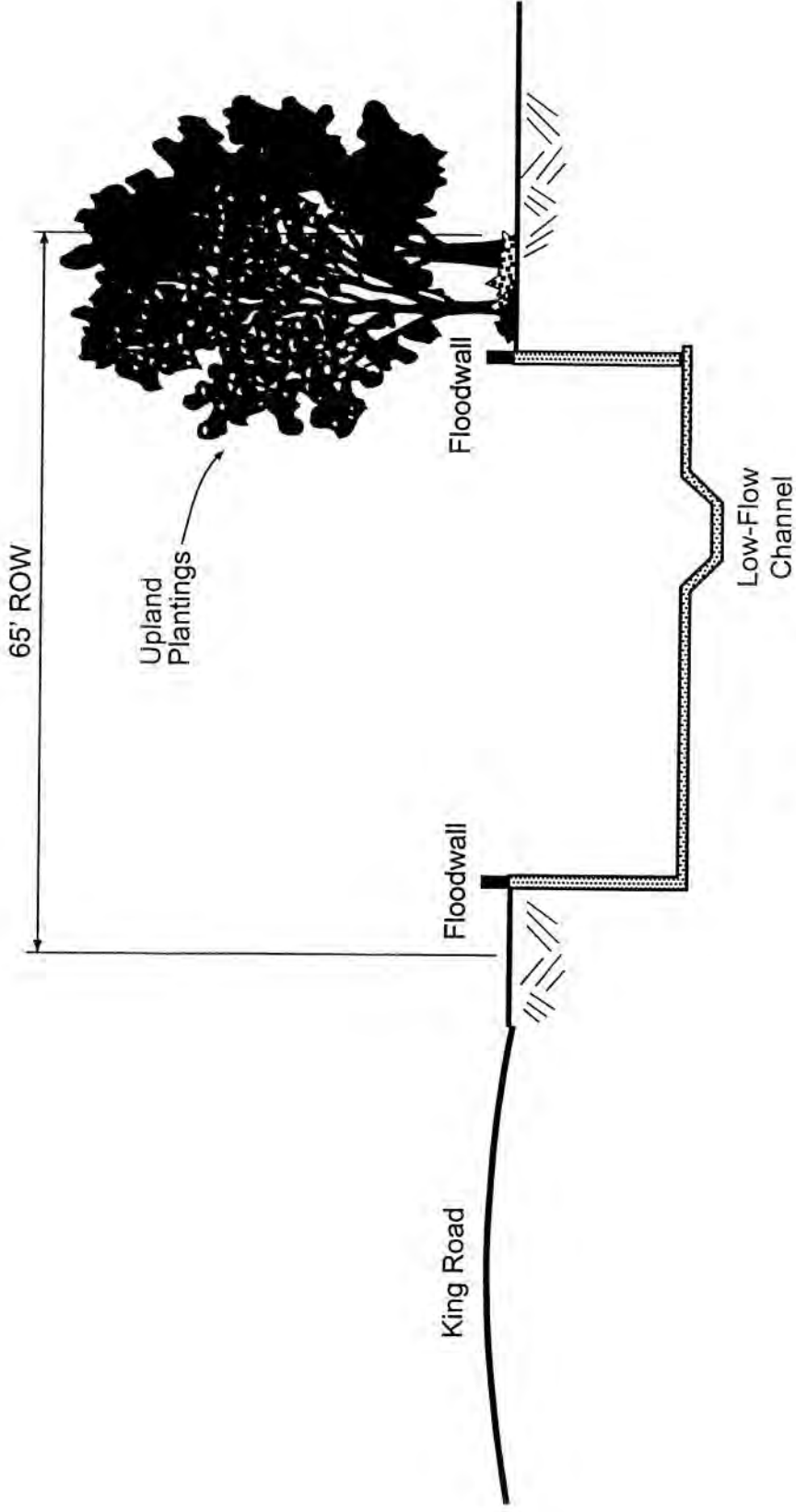
Sta. 32+00 to 38+00

Length = 600'

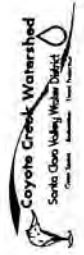
Earthen Channel/Gabions

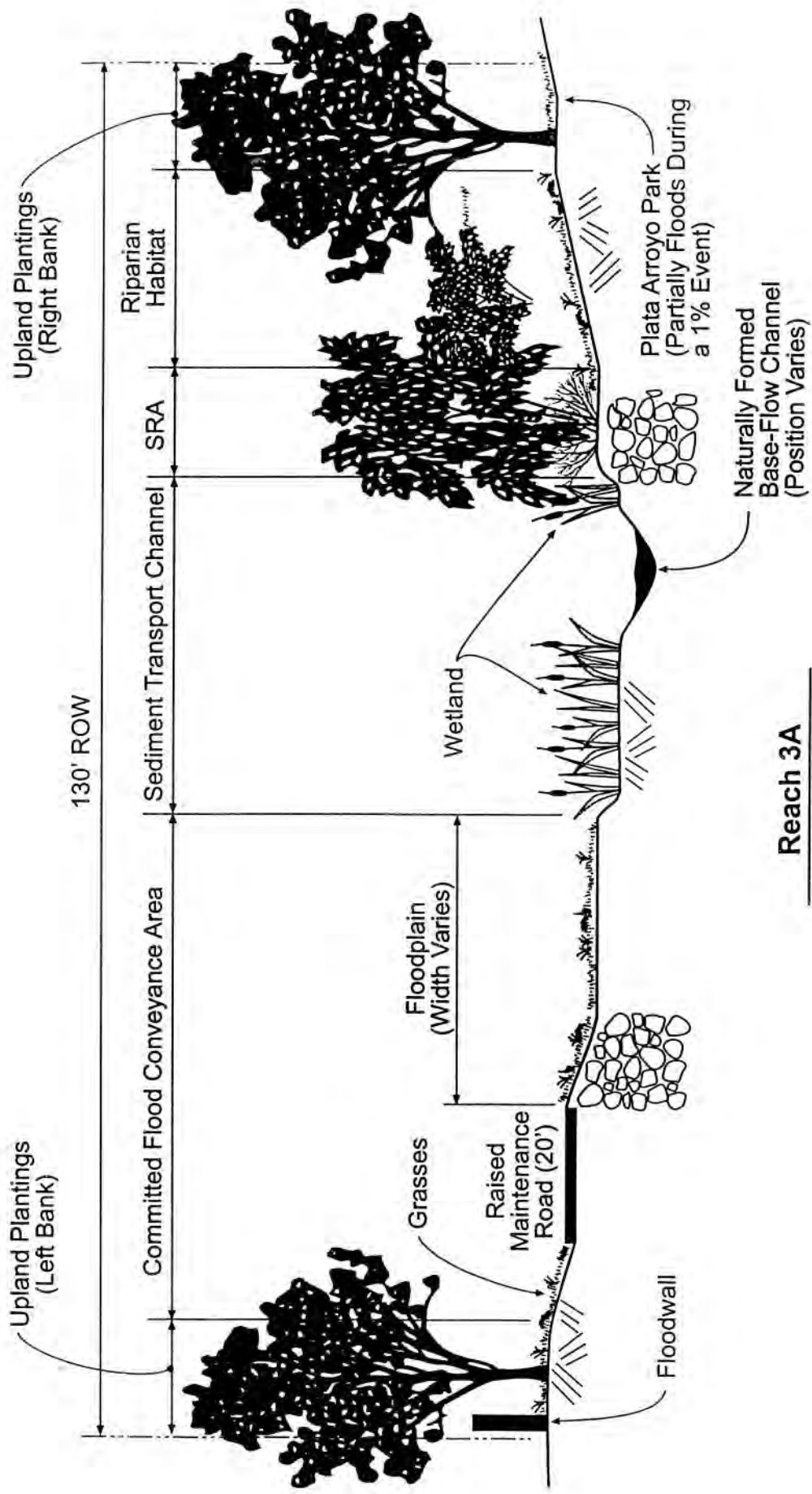
Not To Scale





Reach 2
Typical Section
Sta. 39+00 to 51+00
Length = 1200'
Rectangular Concrete Channel
Not To Scale





Reach 3A

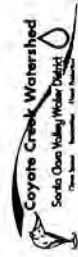
Typical Section

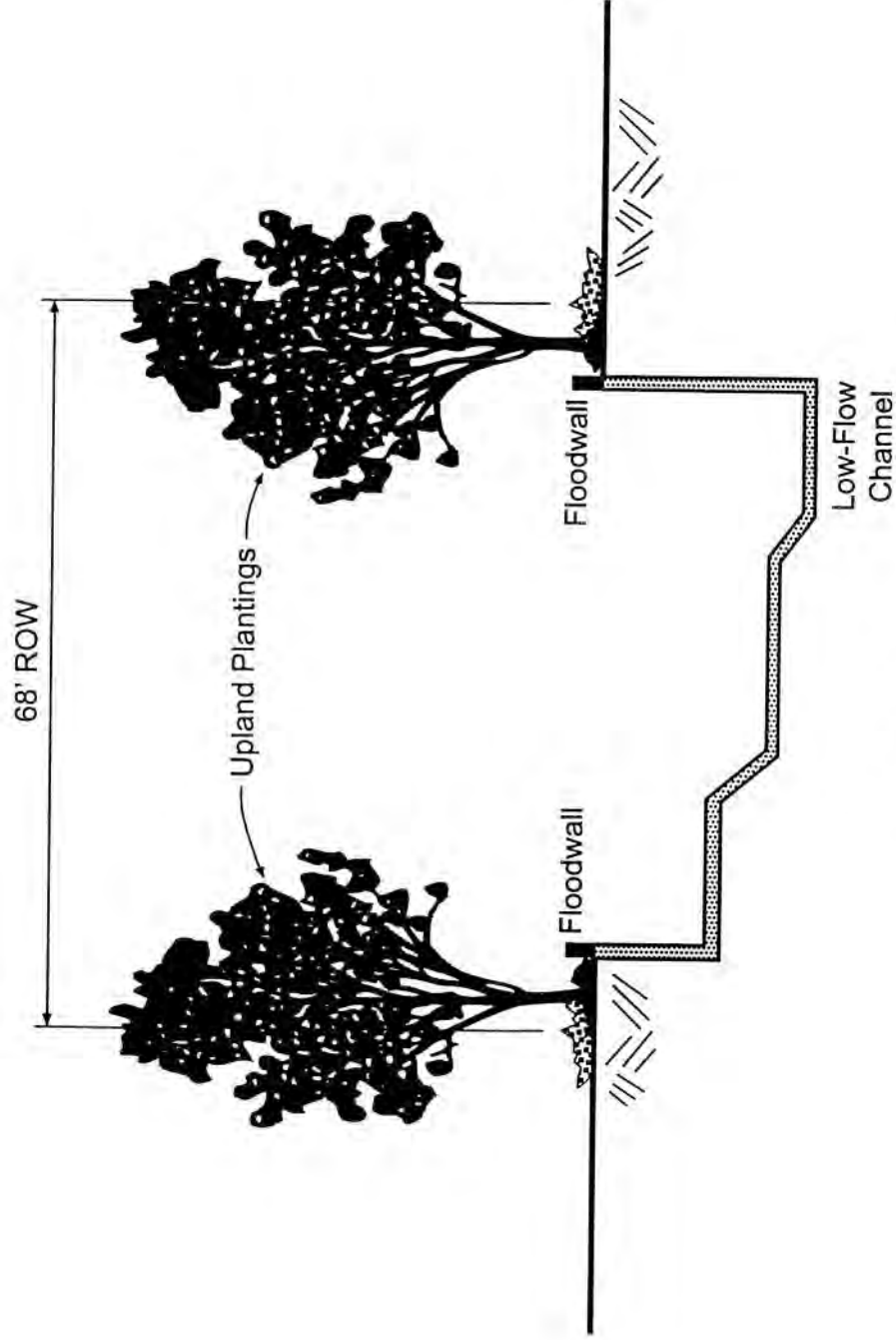
Sta. 54+00 to 70+00

Length = 1600'

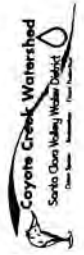
Earthen Channel

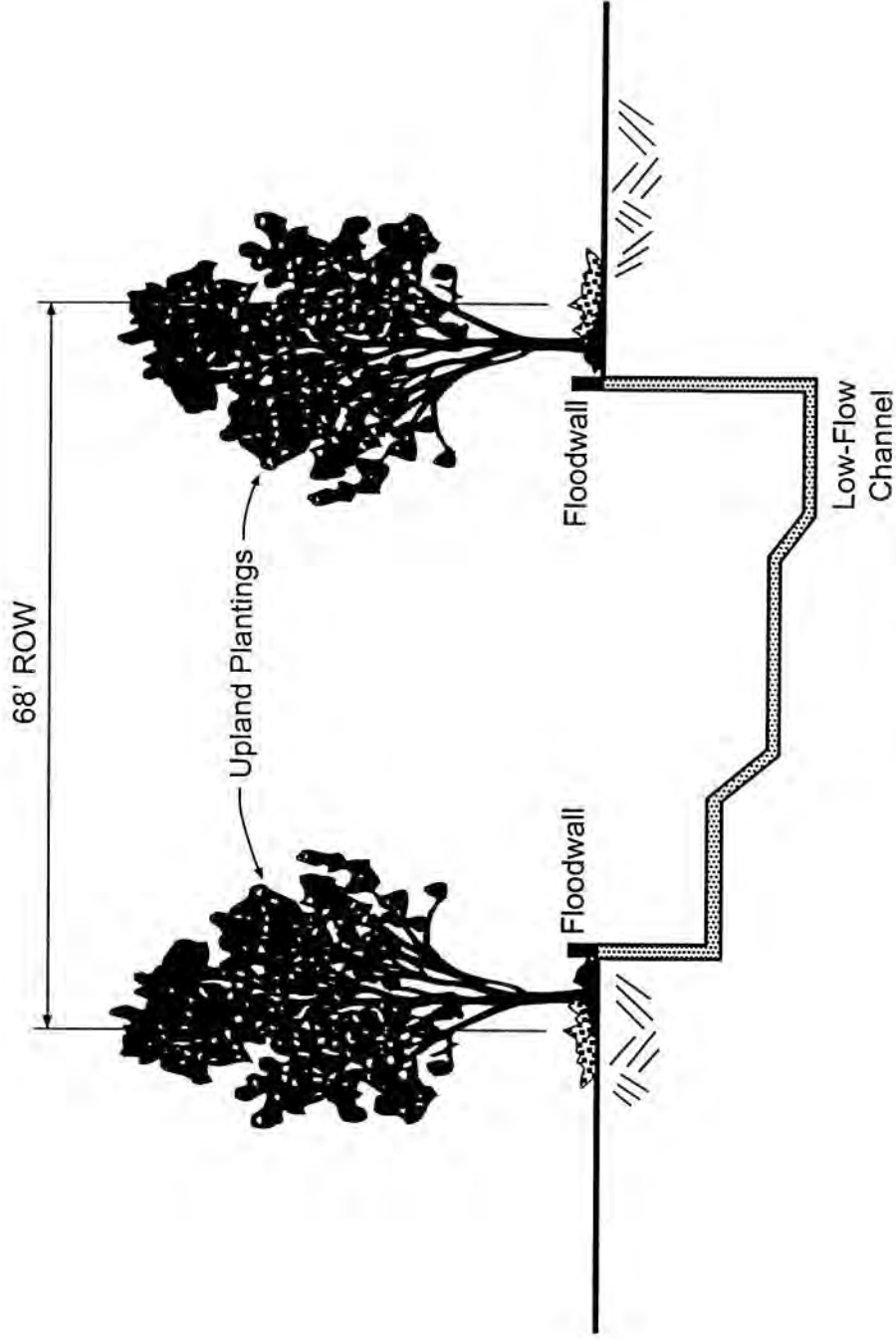
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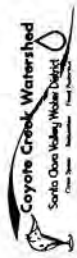


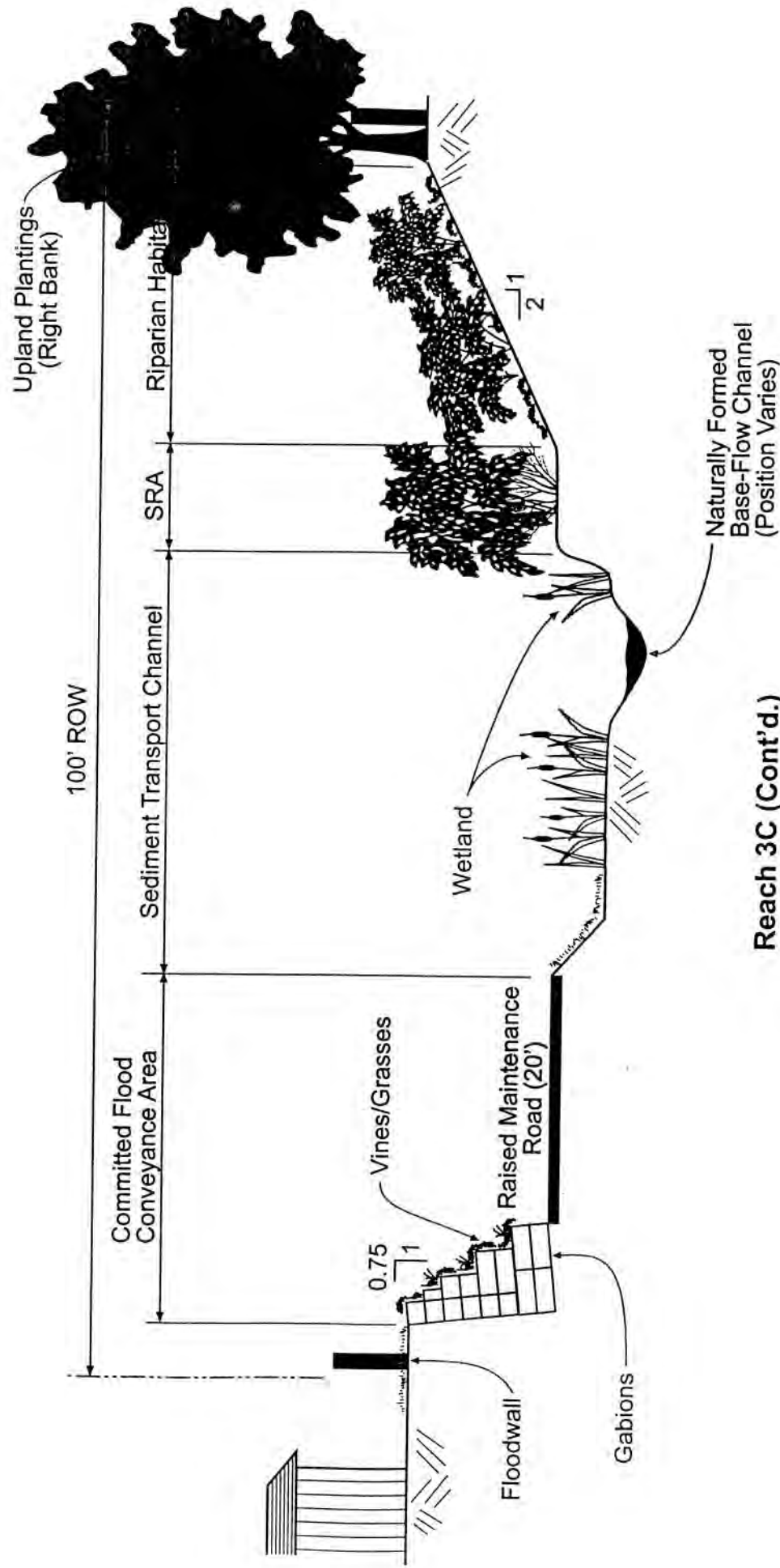
Reach 3B
Typical Section
Sta. 70+00 to 79+75
Length = 925'
Concrete Channel
Not To Scale





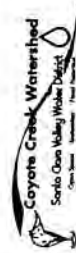
Reach 3C
Typical Section
Sta. 79+75 to 87+00
Length = 725'
Concrete Channel
Not To Scale

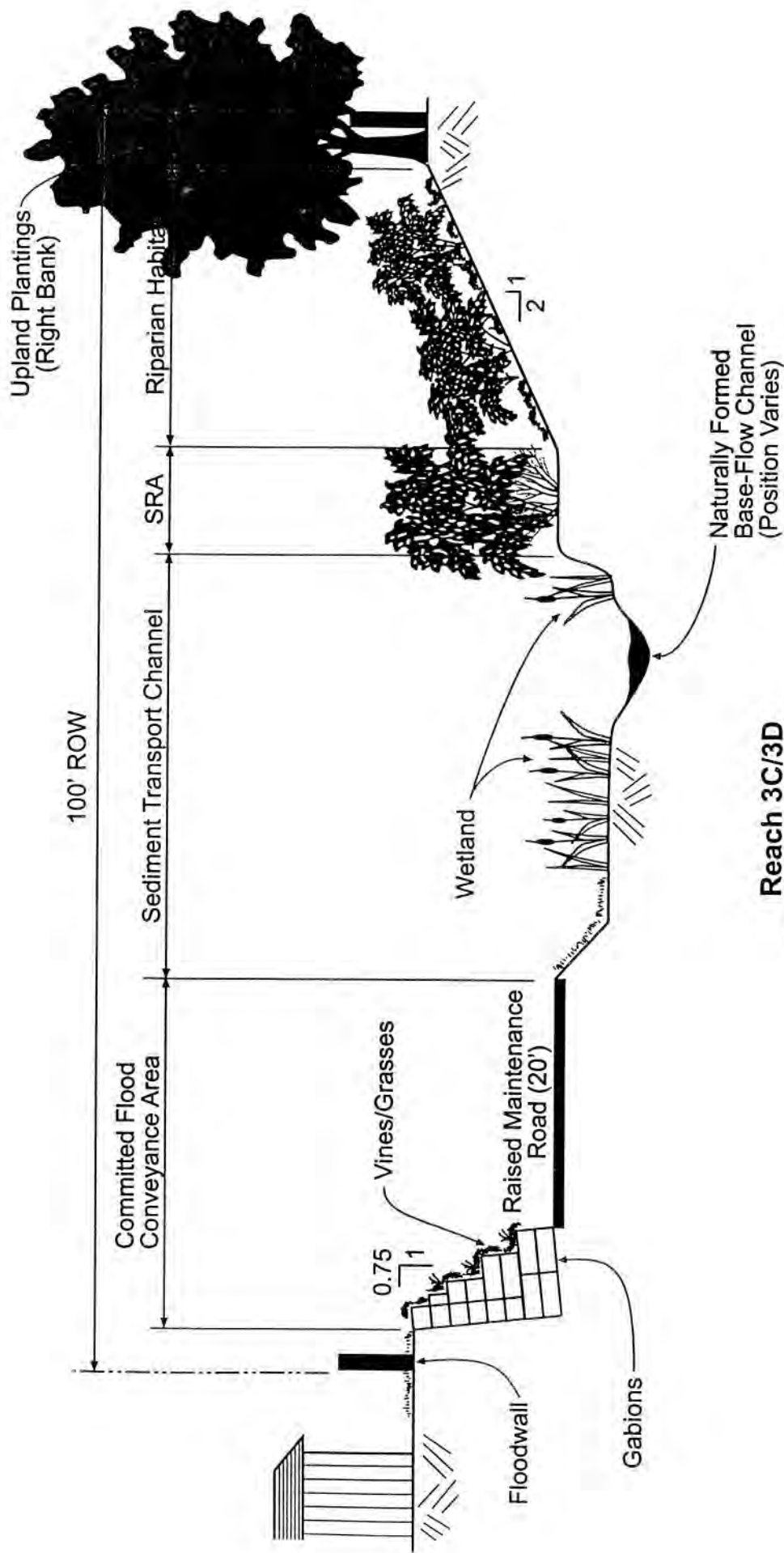




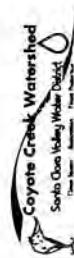
Reach 3C (Cont'd.)
100'- Wide Alternative
Typical Section
Sta. 88+25 to 93+00
Length = 475'
Earthen Channel/Gabions

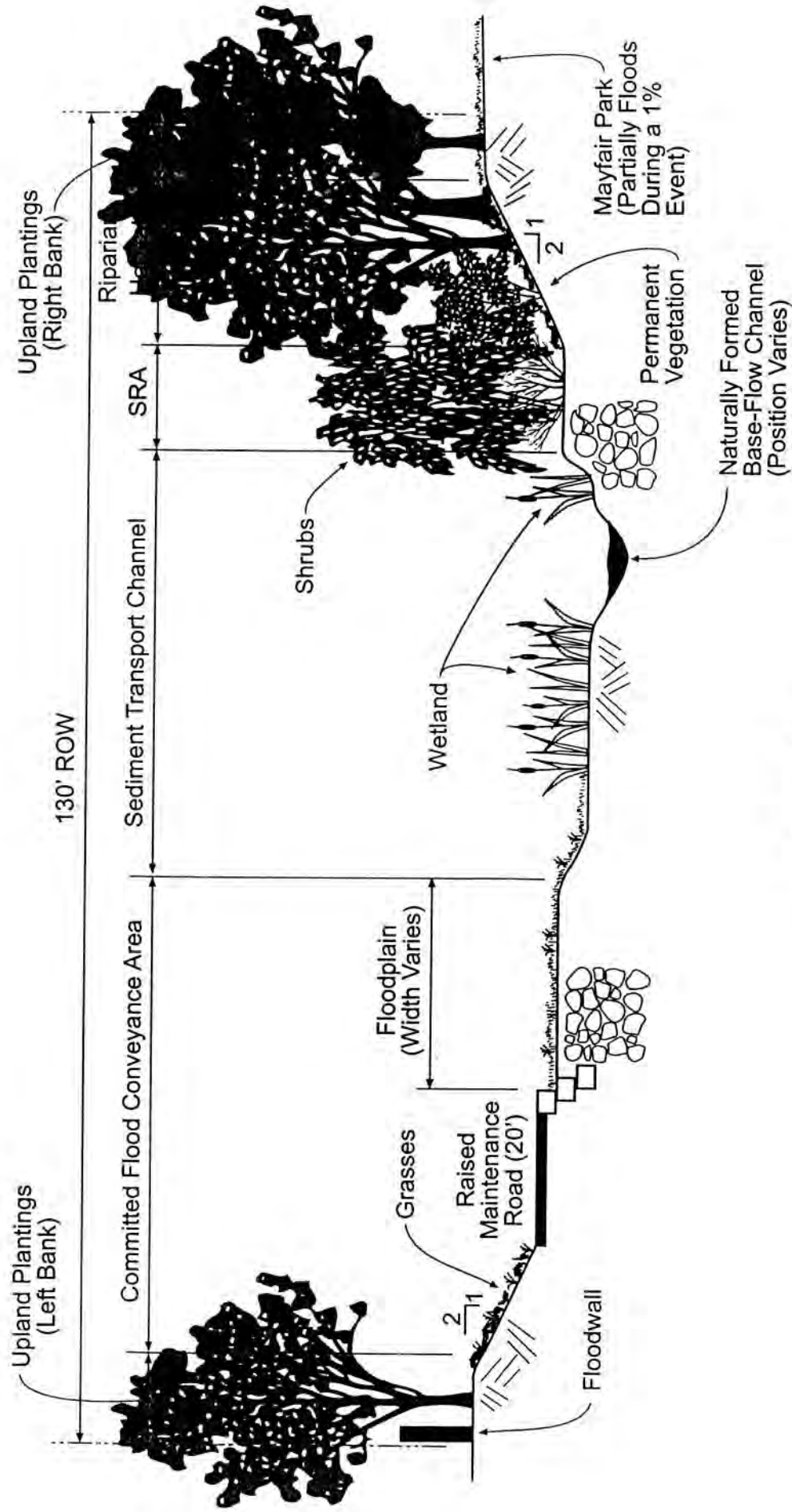
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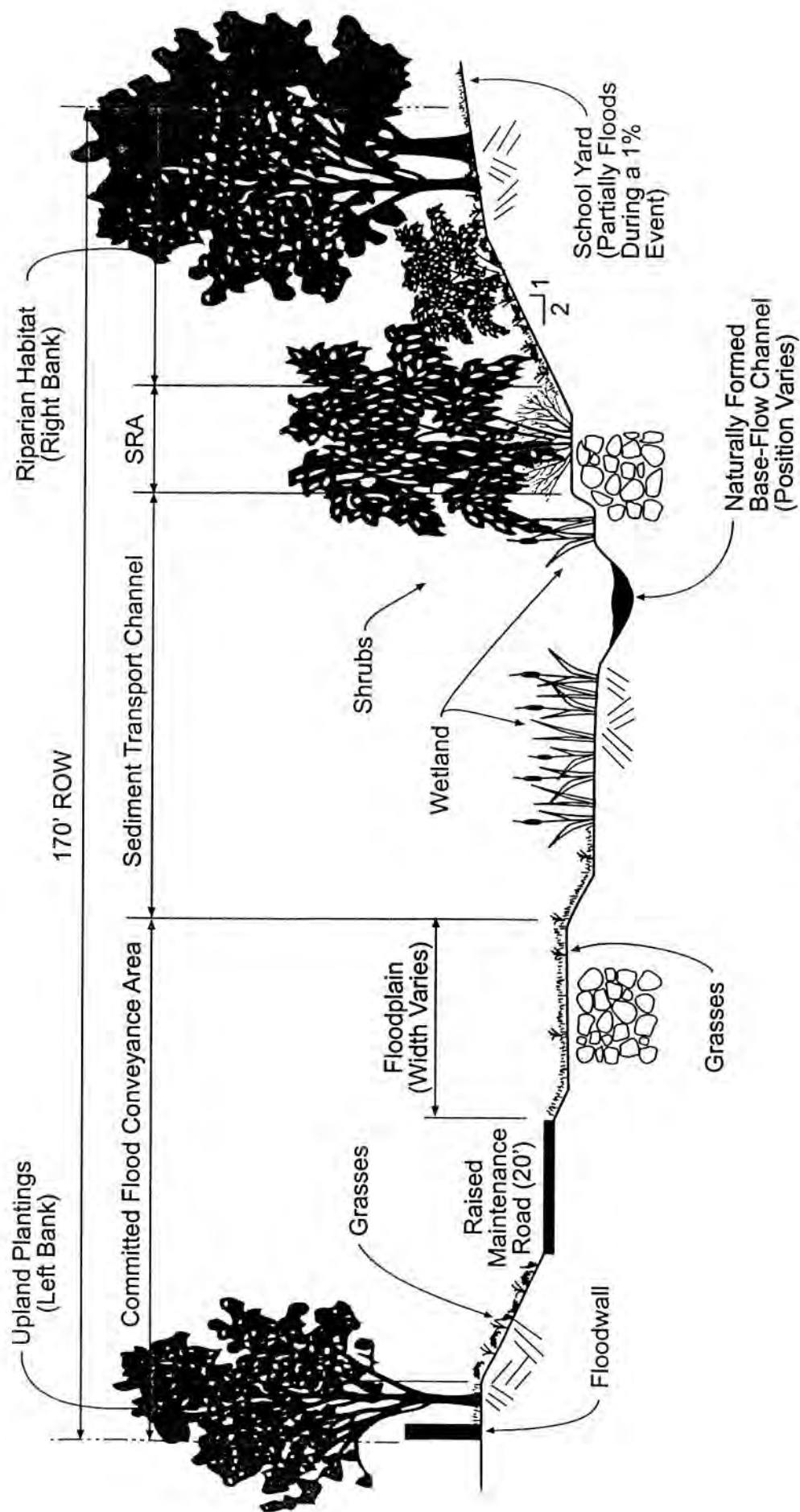


Reach 3C/3D
Typical Section
Sta. 94+00 to 103+50
Length = 950'
Earthen Channel/Gabions
 Not To Scale

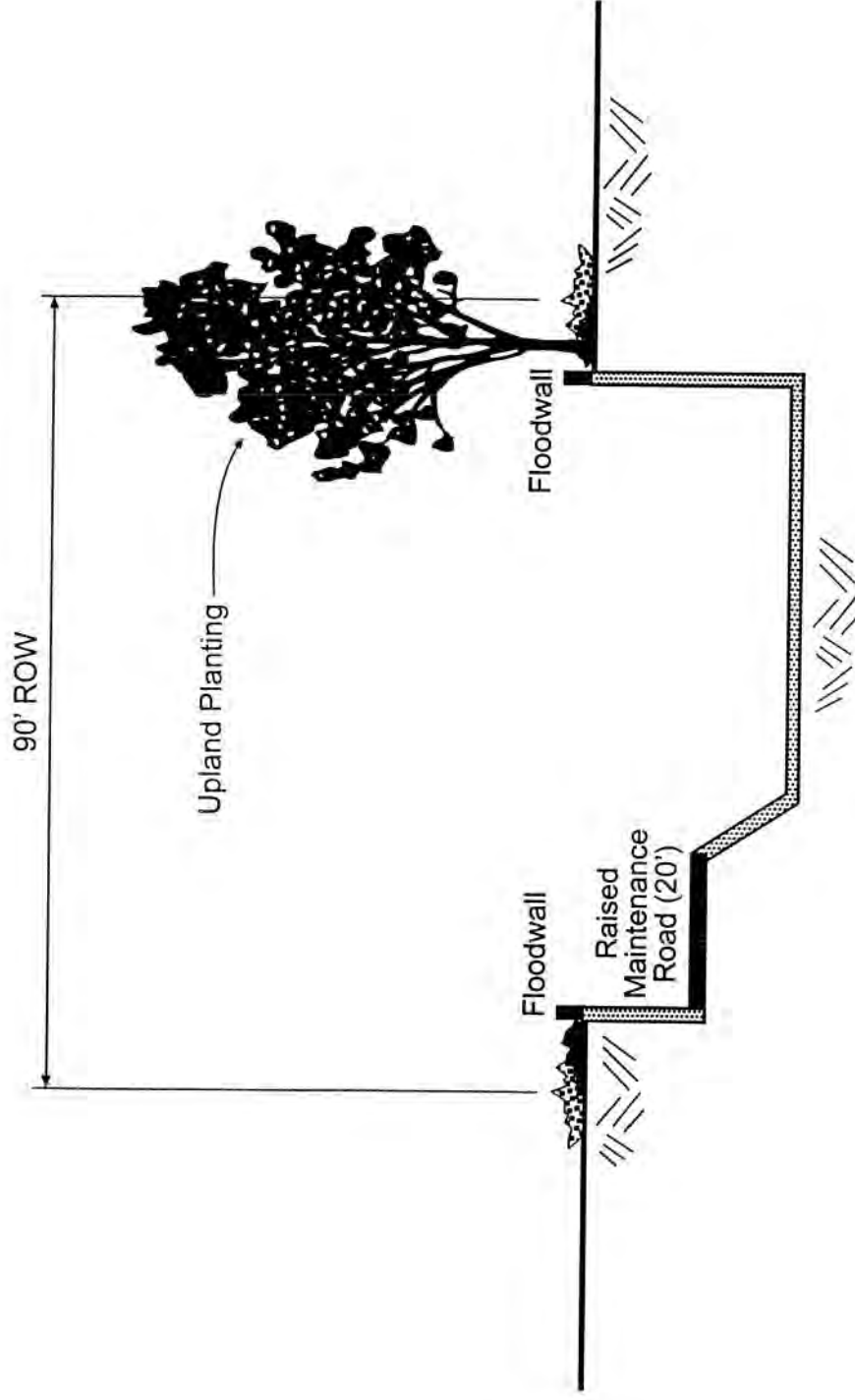




Reach 3E
Typical Section
Sta. 107+00 to 114+00
Length = 655'
Earthen Channel
 Not To Scale



Reach 3F
Typical Section
 Sta. 114+40 to 123+40
 Length = 900'
Earthen Channel
 Not To Scale



Reach 4A

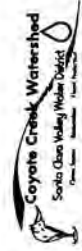
Typical Section

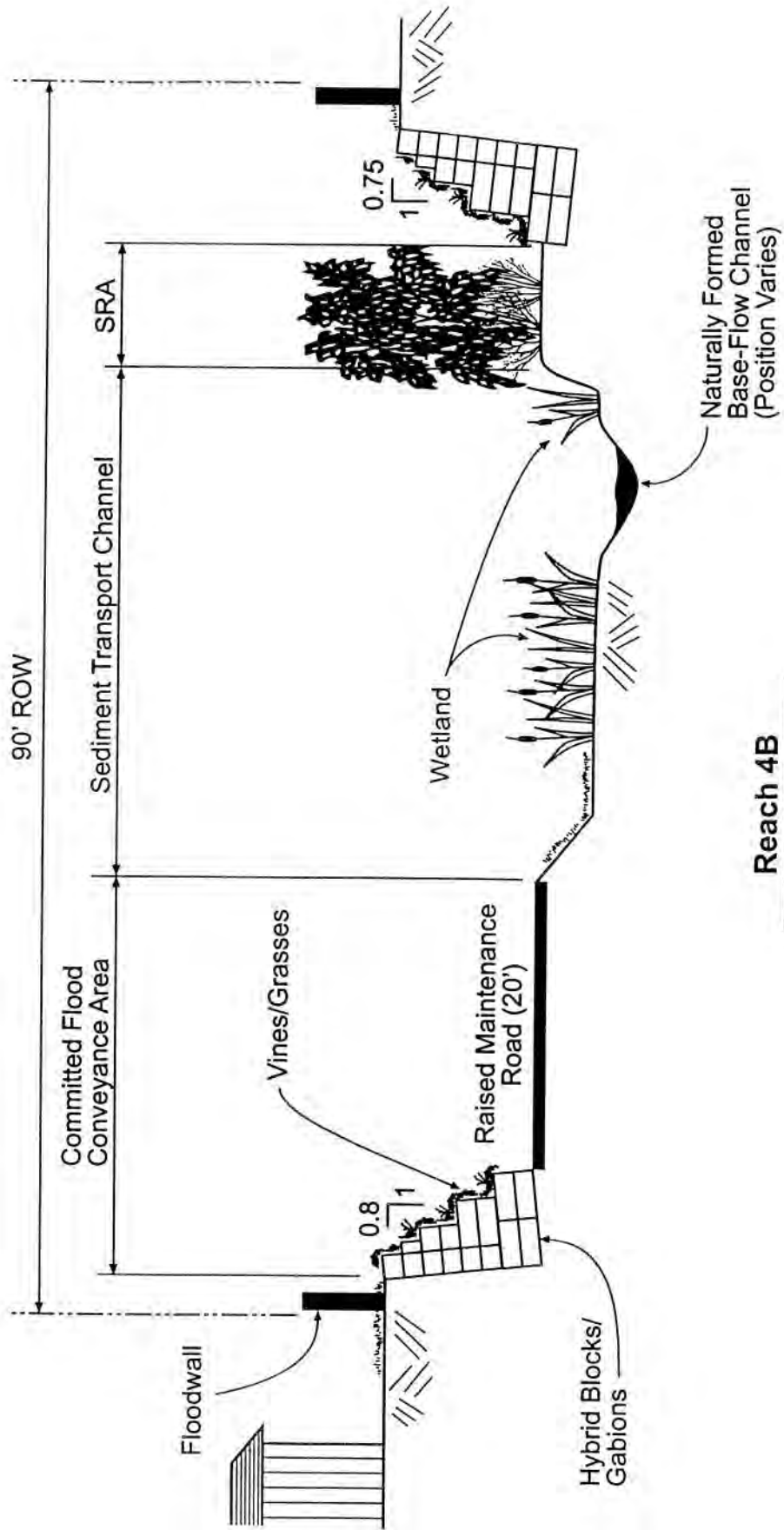
Sta. 128+00 to 130+20

Length = 220'

U-Frame Concrete Channel/Sediment Trap

Not To Scale





Reach 4B

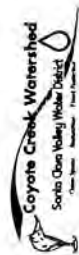
Typical Section

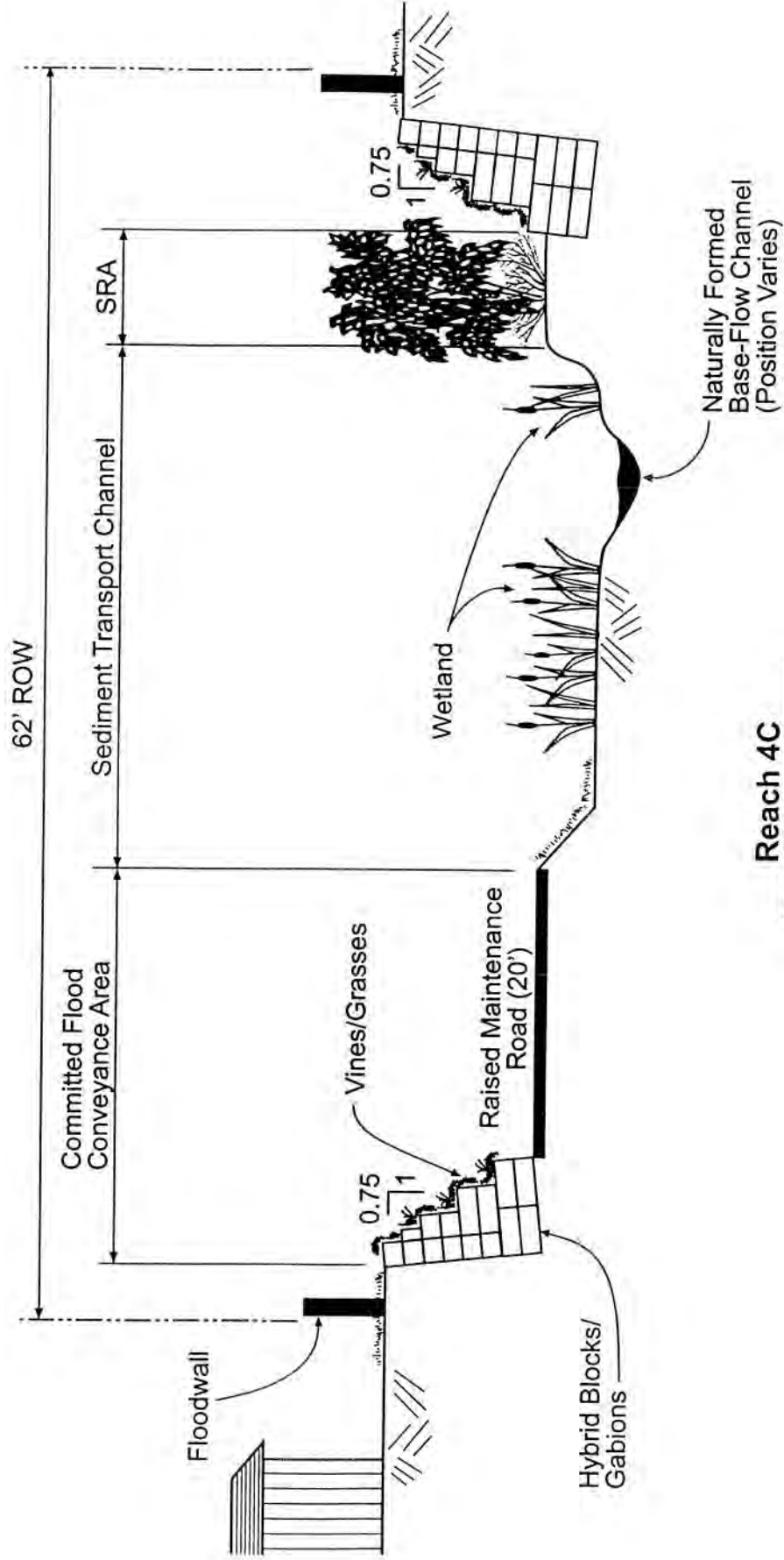
Sta. 132+00 to 154+00

Length = 2200'

Vegetated Hybrid Block Walls/Gabions

Not To Scale





Reach 4C

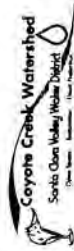
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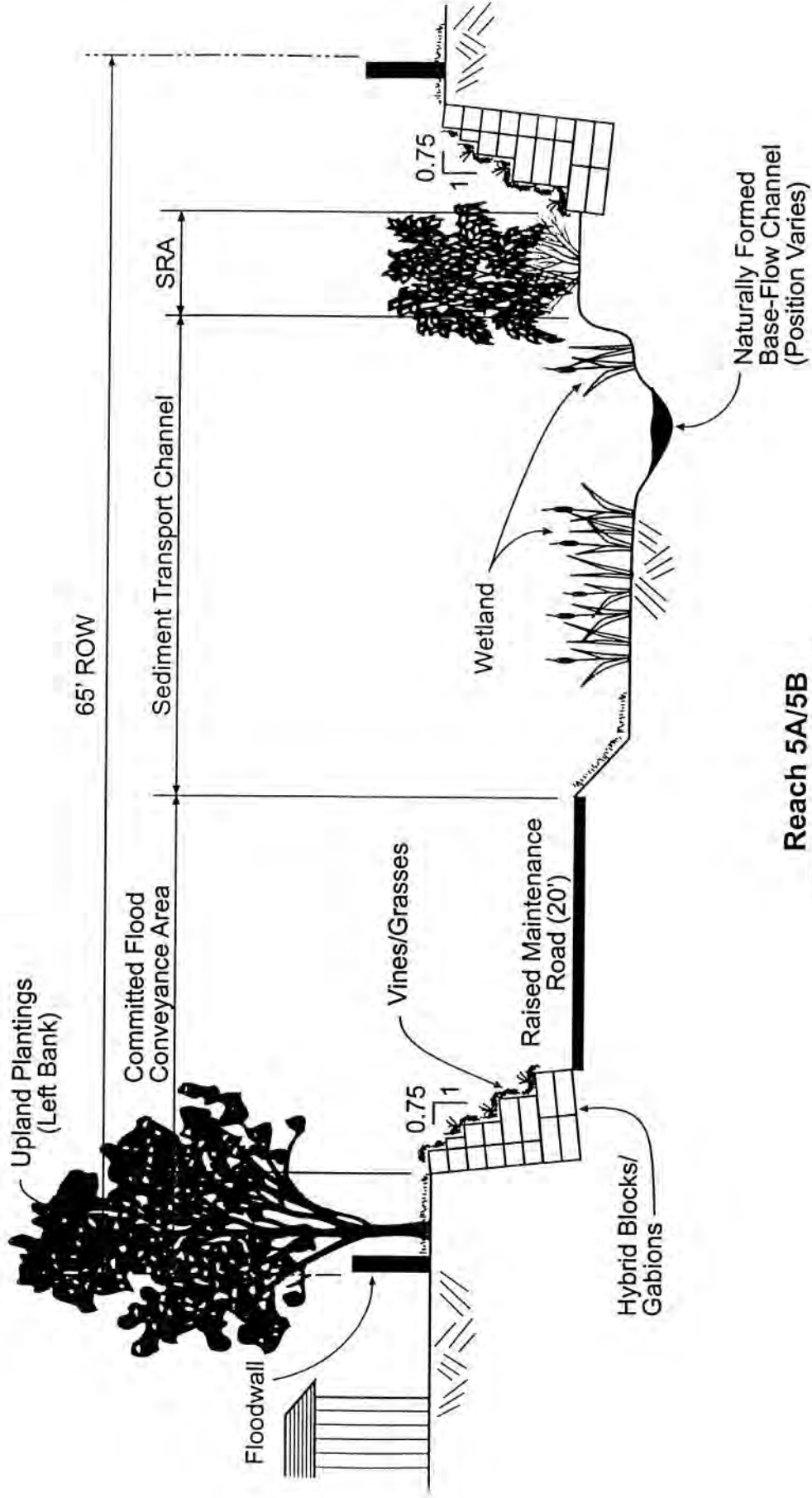
Sta. 153+00 to 170+00

Length = 1700'

Vegetated Hybrid Block Walls/Gabions

Not To Scale





Reach 5A/5B

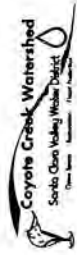
Typical Section

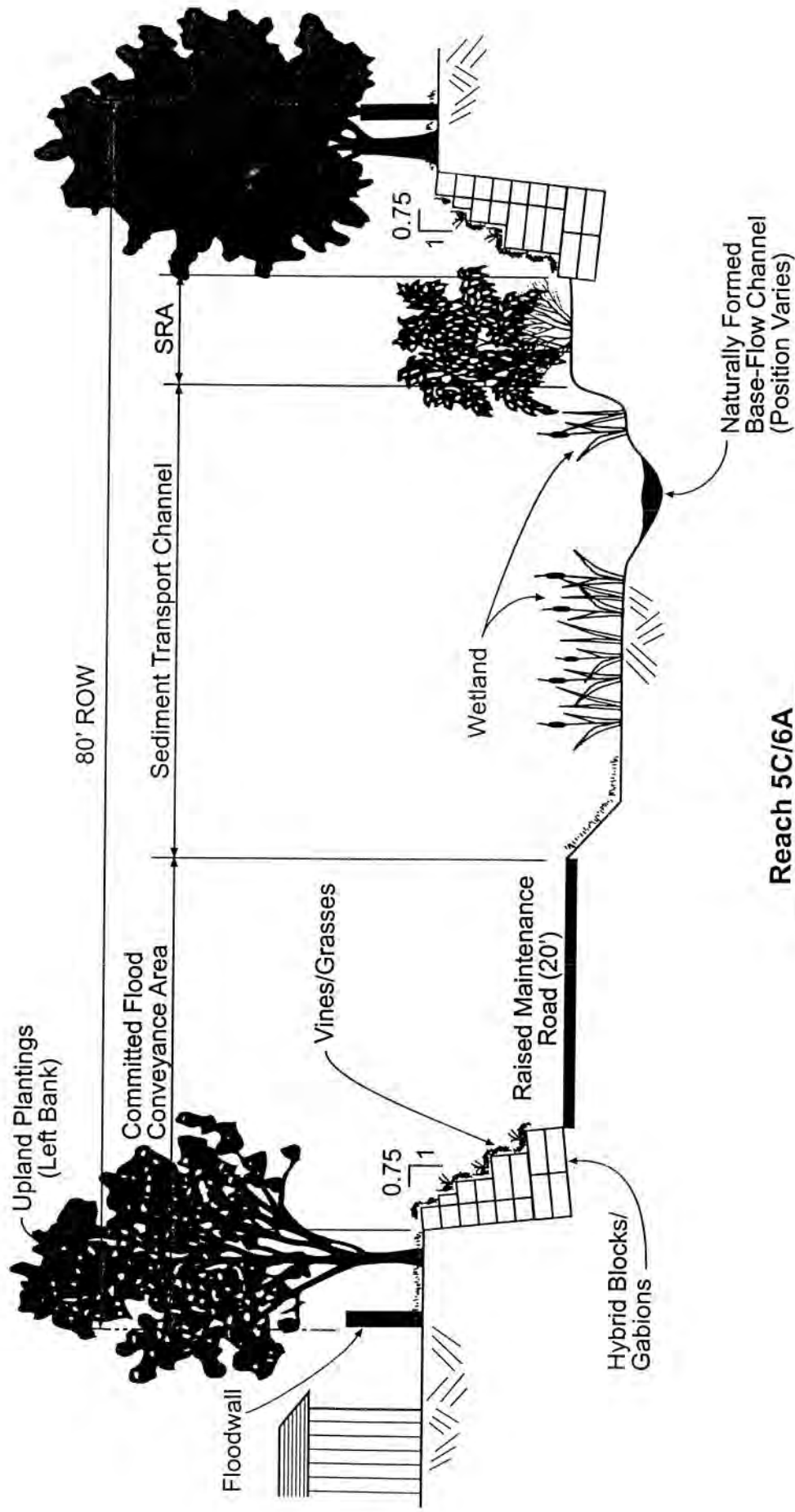
Sta. 170+00 to 180+40

Length = 1040'

Vegetated Hybrid Block Walls/Gabions

Not To Scale





Reach 5C/6A

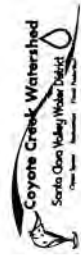
Typical Section

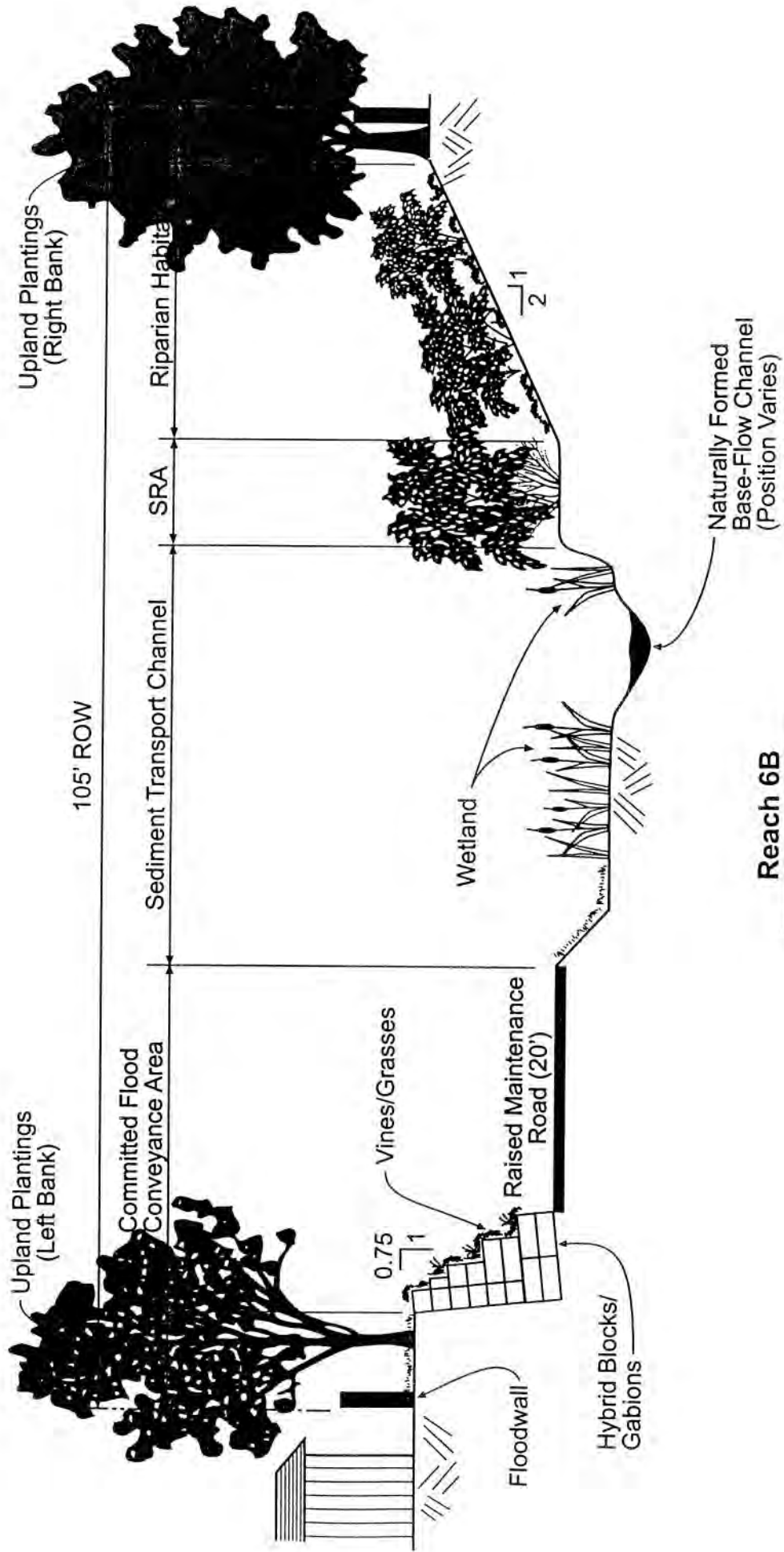
Sta. 182+60 to 217+00

Length = 3310'

Vegetated Hybrid Block Walls/Gabions

Not To Scale





Reach 6B

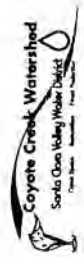
Typical Section

Sta. 217+00 to 244+42

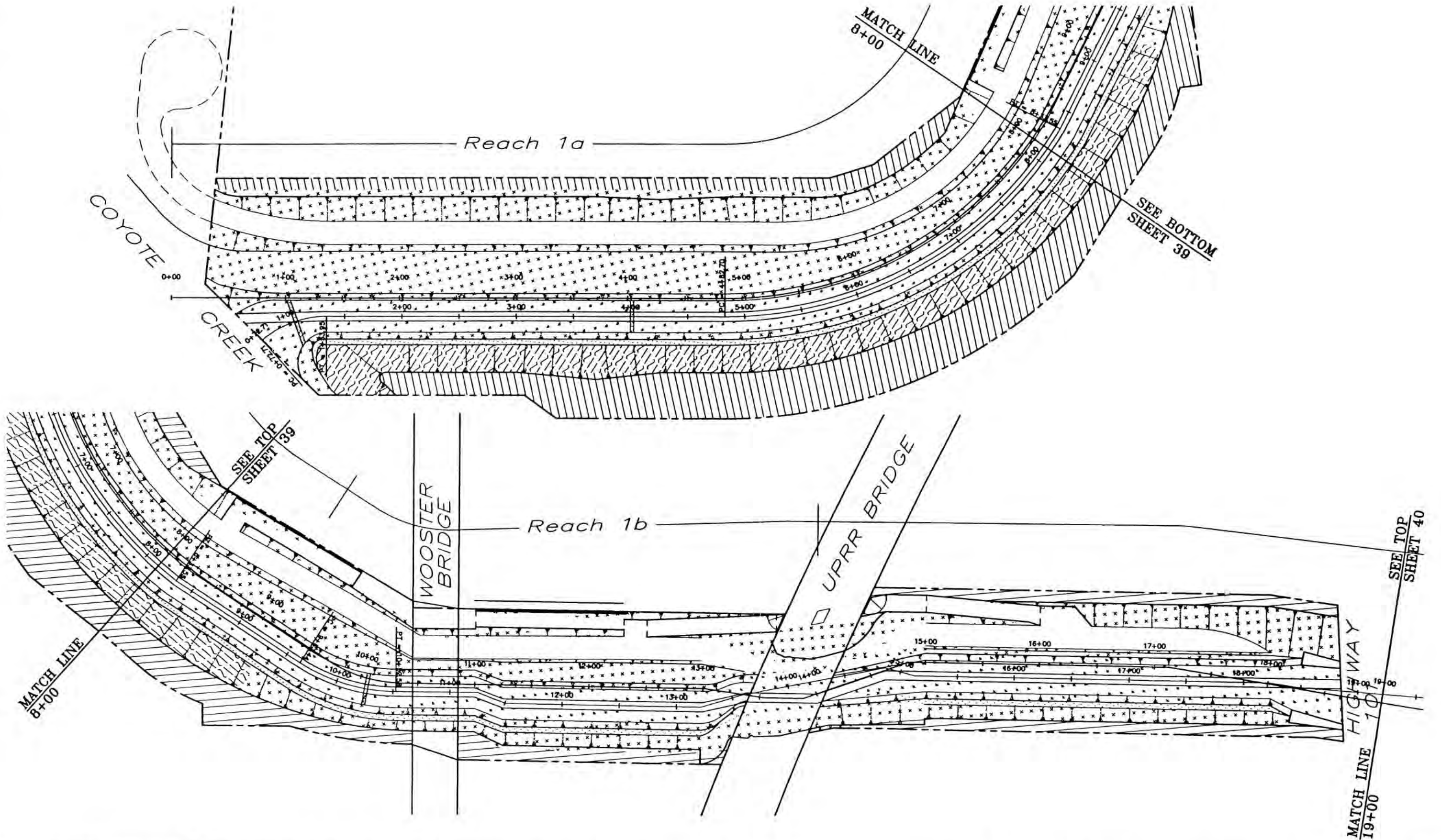
Length = 2540'

Not To Scale

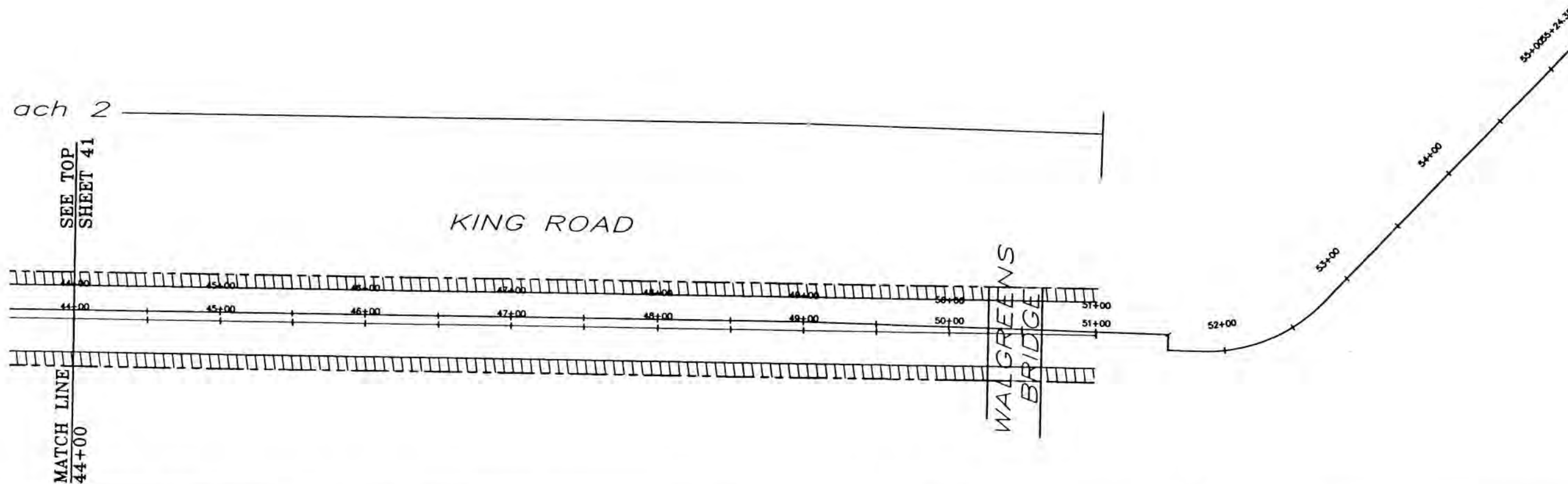
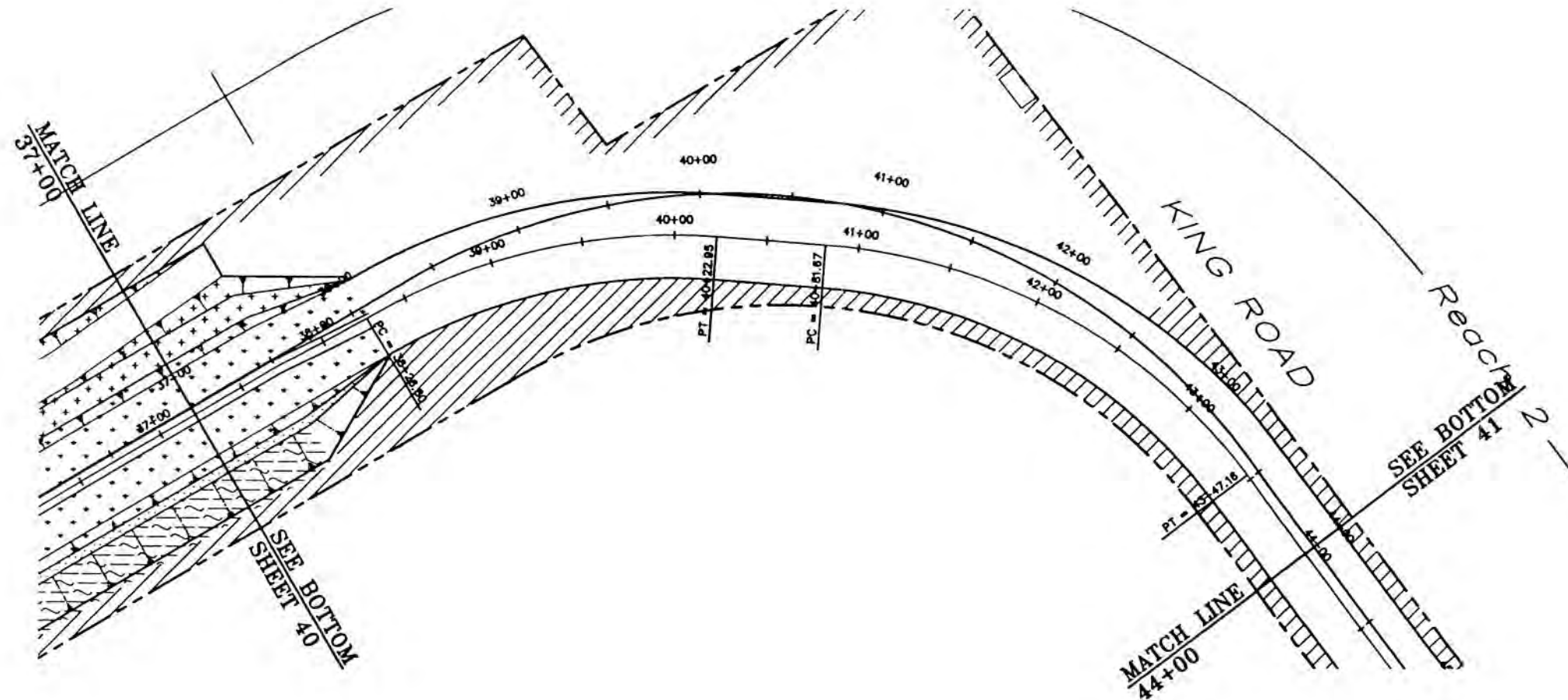
Earthen Channel Vegetated Hybrid Block Walls/Gabions



Attachment 2: Conceptual Revegetation Plans for Reaches 1 through 6



DESCRIPTION	DATE	APPR	Mackay & Somp's INFRASTRUCTURE GROUP CIVIL ENGINEERING • PLANNING • LAND SURVEYING SAN RAMON, CA 94583 (925) 901-1190 <small>MACKEY & SOMPS IS NOT RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF REPRODUCTIONS OF THIS DOCUMENT THAT ARE GENERATED BY OTHERS FROM ELECTRONIC MEDIA</small>		DATE 09/07/2000 DESIGN RTO DRAWN SSG CHECKED RTO	Santa Clara Valley Water District ENGINEERING CERTIFICATION PROJECT ENGINEER	ENGINEERING APPROVAL SUPERVISING ENGINEER	LOWER SILVER CREEK REACH 1 AND 2 PLANTING CONCEPT	SCALE 1" = 40' SHEET RL-39 ? OF ?
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DESCRIPTION	DATE	APPR	Mackay & Somp INFRASTRUCTURE GROUP CIVIL ENGINEERING • PLANNING • LAND SURVEYING SAN RAMON, CA 94583 (925) 901-1190 <small>MACKAY & SOMPS IS NOT RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF REPRODUCTIONS OF THIS DOCUMENT THAT ARE GENERATED BY OTHERS FROM ELECTRONIC MEDIA</small>			DATE 09/07/2000	Santa Clara Valley Water District		LOWER SILVER CREEK REACH 1 AND 2 PLANTING CONCEPT	SCALE 1" = 40'
						DESIGN RTO	ENGINEERING CERTIFICATION	ENGINEERING APPROVAL		SHEET
						DRAWN SSG				RL-41
						CHECKED RTO	PROJECT ENGINEER	SUPERVISING ENGINEER		? OF ?
							R.C.E. NO.			



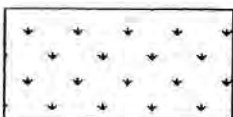
TOP OF BANK RIPARIAN FOREST

The Top of Bank Riparian Forest will be located at the top of banks and planted with native riparian vegetation including trees, shrubs, and vines that are typically found between mid slope and top of bank. It will be designed to provide a diverse and complex habitat. Plant species will be combined to form three distinct canopy layers. The layers will include an overstory, midstory and understory.

NO MAINTENANCE

BOTANICAL NAME	COMMON NAME
TREES:	
ACER NEGUNDO	BOX ELDER
AESCHULUS CALIFORNICA	CALIFORNIA BUCKEYE
QUERCUS AGRIFFOLIA	COAST LIVE OAK
QUERCUS LOBATA	VALLEY OAK
SAMBUCUS MEXICANA	BLUE ELDERBERRY

SHRUBS:	
BACCHARIS PILLULARIS	COYOTE BRUSH
ROSA CALIFORNICA	CALIFORNIA ROSE

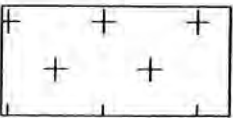


EMERGENT WETLAND

The Emergent Wetland will be located within the sediment transport channel. Native emergent wetland plants are expected to naturally colonize this site. This habitat will provide shelter, food, and breeding area for many wildlife species.

LOW MAINTENANCE

BOTANICAL NAME	COMMON NAME
NATIVE AQUATIC VEGETATION EXPECTED TO NATURALLY COLONIZE:	
SCIRPUS CALIFORNICUS	CALIFORNIA BULRUSH
SCIRPUS ACUTUS	COMMON RILE
TYPHA ANGUSTRIFOLIA	NARROW LEAF CATTAIL
TYPHA LATIFOLIA	BROAD LEAF CATTAIL



HYDROSEED MIX

The hydroseed mix shall be applied throughout the project site and will consist of native grasses and forbs. The primary purpose of this mix is to provide erosion control throughout the site.

NO, LOW AND HIGH MAINTENANCE

BOTANICAL NAME	COMMON NAME
GRASSES:	
BROMUS CARINATUS	CALIFORNIA BROME
HORDEUM BRACHYANTHERUM	MEADOW BARLEY
VULPIS MICROSTACHYS	THREE NEED FESCUE
FORB:	
ESCHSCHOLZIA CALIFORNICA	CALIFORNIA POPPY
CLARIGA AMIGDA	FARWELL TO SPRING
LUPINUS SUCCULENTUS	ARROYO LUPINE



BANK RIPARIAN FOREST

The Bank Riparian Forest will be located between the Top of Bank Riparian Forest and the Shaded Riverine Aquatic Habitat and will be planted with native riparian vegetation including trees, shrubs and vines that are typically found at this location. It will be designed to provide a diverse and complex habitat. Plant species will be combined to form three distinct canopy layers. The layers will include an overstory, midstory and understory.

NO MAINTENANCE

BOTANICAL NAME	COMMON NAME
TREES:	
ACER NEGUNDO	BOX ELDER
AESCHULUS CALIFORNICA	CALIFORNIA BUCKEYE
QUERCUS AGRIFFOLIA	COAST LIVE OAK
QUERCUS LOBATA	VALLEY OAK
PLATANUS RACEMOSA	CALIFORNIA SYCAMORE
POPULUS FREMONTII	FREMONT COTTONWOOD
SAMBUCUS MEXICANA	BLUE ELDERBERRY
SHRUBS:	
ARTEMISIA DOUGLASSIANA	MUGWORT
ASTER CHILDENSIS	WESTERN ASTER
BACCHARIS DOUGLASSI	MARSH BACCHARIS
BACCHARIS PILLULARIS	COYOTE BRUSH
ROSA CALIFORNICA	CALIFORNIA ROSE
RUBUS URSINUS	CALIFORNIA BLACKBERRY
SYMPHORCARPOS ALBUS 'LAEVIGATUS'	SNOWBERRY
GRASSES:	
LEYMUS TRITICOIDES	CREeping WILD RYE



SHADED RIVERINE AQUATIC (SRA)

The Shaded Riverine Aquatic (SRA) habitat will be located along the bank at the toe of the southern bank immediately adjacent to the Sediment Transport Channel. The SRA habitat will provide shade to the low flow channel to benefit fish and other aquatic organisms.

NO MAINTENANCE

BOTANICAL NAME	COMMON NAME
TREES:	
POPULUS FREMONTII	FREMONT COTTONWOOD
SALIX ERIQUA	SANDBAR WILLOW
SALIX LASIOLEPS	ARROYO WILLOW
SALIX LAEVIGATA	RED WILLOW
SHRUBS:	
ARTEMISIA CALIFORNICA	MUGWORT
GRASSES:	
LEYMUS TRITICOIDES	CREeping WILD RYE

HABITAT TYPE MATRIX







Habitat Type	Habitat Description	1A	1B	1C	1D	REACH 1 TOTAL	REACH 2 TOTAL	
A	Top of Bank Riparian**	0.88	0.16	0.50	0.66	2.20	0.37	
A'	Top of Bank Riparian	0.00	0.00	0.00	0.00	0.00	0.33	
B	Bank Riparian	0.51	0.00	0.00	0.49	1.00	0.00	
C	SRA	0.10	0.05	0.11	0.12	0.38	0.00	
H	No Planting Zone*	0.00	0.15	0.26	0.01	1.03	0.00	
						3.57	0.37	Riparian Habitat Total
D	Emergent Wetlands	0.41	0.24	0.93	1.08	2.66	0.00	Emergent Wetlands Total
D'	Emergent Wetlands	0.26	0.12	0.28	0.22	0.88	0.00	
E	Open Water	0.16	0.09	0.22	0.19	0.66	0.00	Open Water Habitat Total
F	No Planting Zone*	0.32	0.00	0.00	0.00	0.32	0.00	
G	Maintenance Road	0.41	0.34	0.62	0.50	1.87	0.68	
H'	No Planting Zone*	0.74	0.32	0.53	0.81	1.84	0.00	
Total		3.78	1.47	3.50	4.08	12.83	1.39	

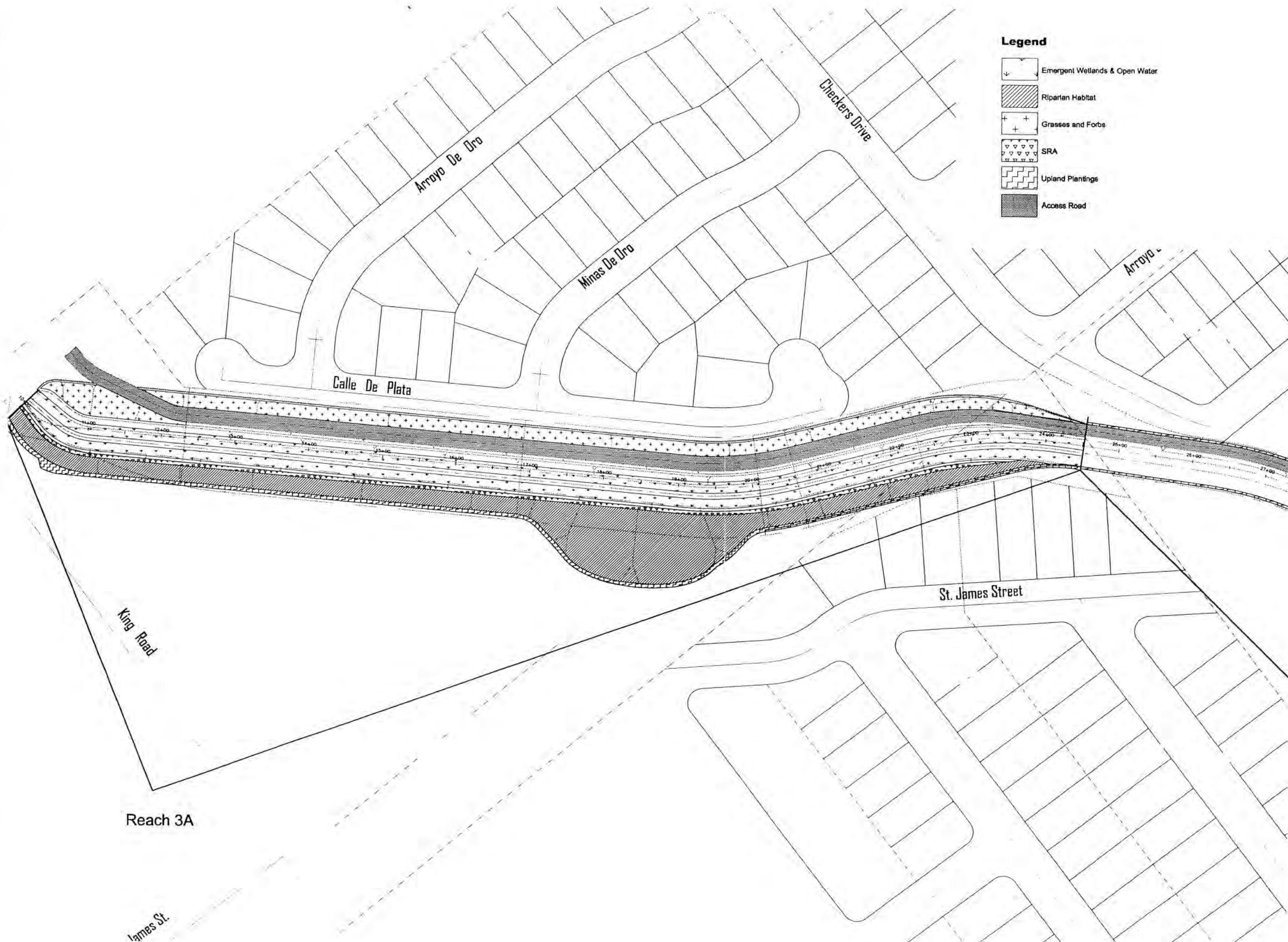
NOTE: All numbers are in acres.
A' Area only for left top of bank in "U-Frame" reaches.
D' Area along the banks of the Sediment Transport Channel.
H' Areas only for slopes steeper than 2 to 1 and bench areas.
* Hydro seeding shall be applied in all areas.
** This includes the left and right top of banks, except for area A'.



TOM RICHMAN & ASSOCIATES
Urban Design, Planning and Landscape Architecture
654 Gilman Street, Palo Alto, CA 94301
Voice: 650 462.8880 Fax: 650 325.10

Legend

-  Emergent Wetlands & Open Water
-  Riparian Habitat
-  Grasses and Forbs
-  SRA
-  Upland Plantings
-  Access Road



REVISION	DATE	DESCRIPTION

PROJECT TITLE:

**Lower Silver Creek
Reach 3**

San Jose, California

SHEET TITLE:







Reach 3A

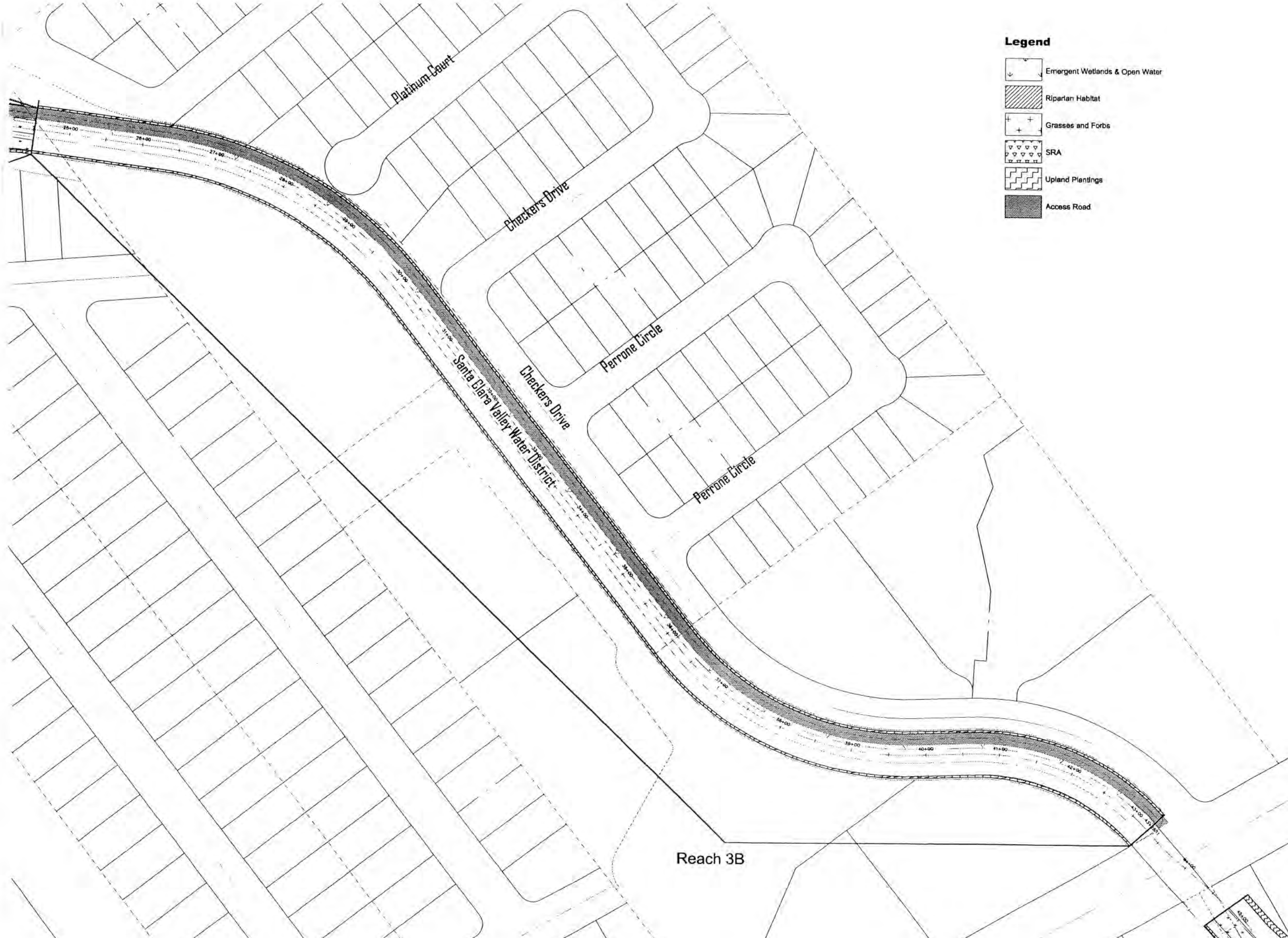
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SCALE:	1"=50'	L1
DRAWN:	jm	



TOM RICHMAN & ASSOCIATES
Urban Design, Planning and Landscape Architecture
654 Gilman Street, Palo Alto, CA 94301
Voice: 650 462.8880 Fax: 650 325.101

Legend

-  Emergent Wetlands & Open Water
-  Riparian Habitat
-  Grasses and Forbs
-  SRA
-  Upland Plantings
-  Access Road



REVISION	DATE	DESCRIPTION

PROJECT TITLE:

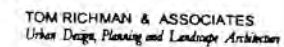
**Lower Silver Creek
Reach 3**

San Jose, California

SHEET TITLE:

Reach 3B

DATE:	07/09/01	SHEET NUMBER
SCALE:	1"=50'	L2
DRWN:	im	



654 Gilman Street, Palo Alto, CA 9430
Voice 650 462.8880 Fax 650 325.1011



Emergent Wetlands & Open Water

Riparian Habitat

+	+	Grasses and Forbs
+	+	

 SRA

 Upland Plantings

Access Road

REVISION	DATE	DESCRIPTION
----------	------	-------------

PROJECT TITLE:

Lower Silver Creek Reach 3

San Jose, California

SHEET TITLE:

Reach 3C & 3D

DATE: 07/09/01

SHEET NUMBER

SCALE: 1 in. = 50 ft







L3

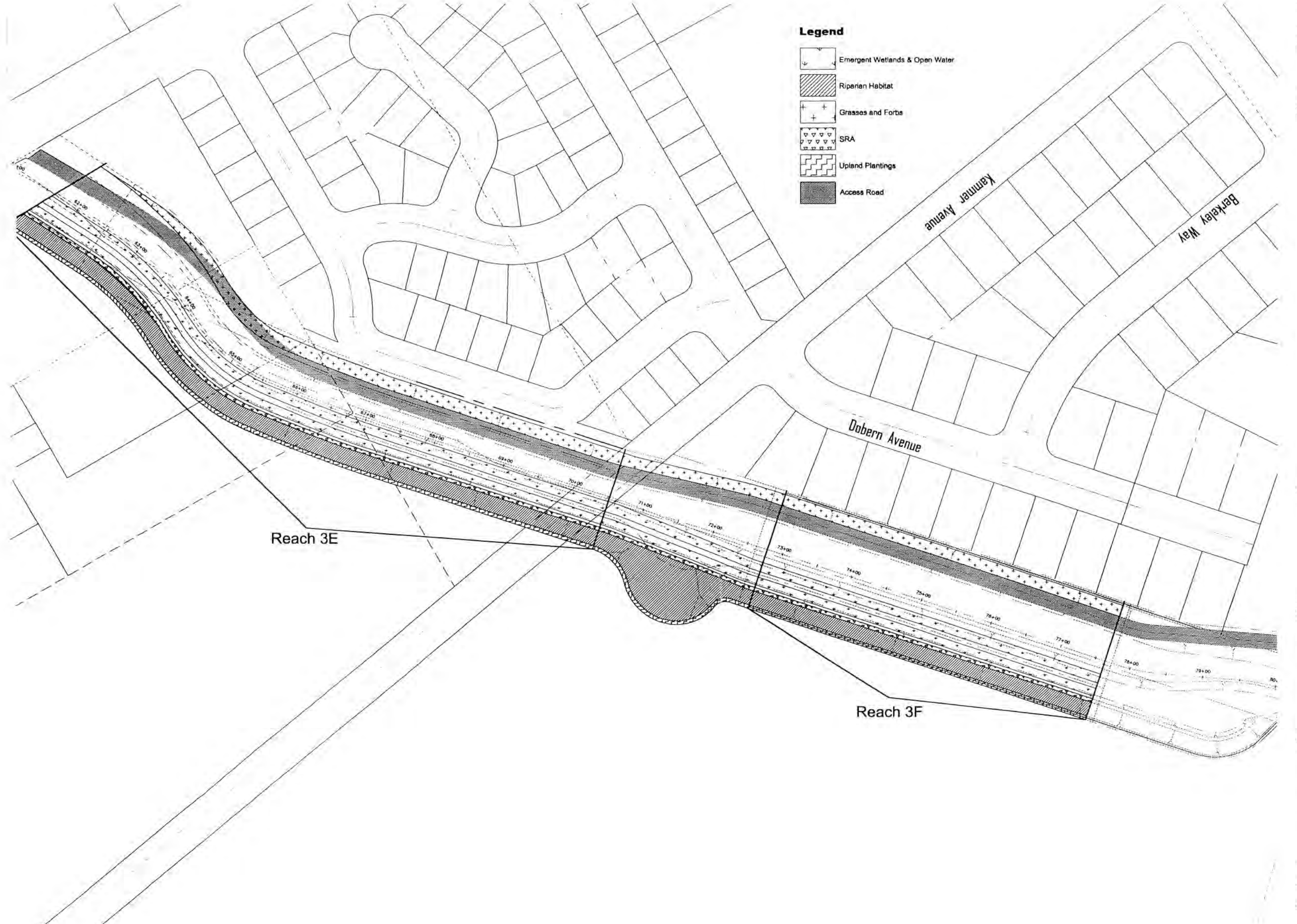
DARWIN



TOM RICHMAN & ASSOCIATES
Urban Design, Planning and Landscape Architecture
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Voice 650 462.8880 Fax 650 325.1010

Legend

-  Emergent Wetlands & Open Water
-  Riparian Habitat
-  Grasses and Forbs
-  SRA
-  Upland Plantings
-  Access Road



REVISION	DATE	DESCRIPTION

PROJECT TITLE:

**Lower Silver Creek
Reach 3**

San Jose, California

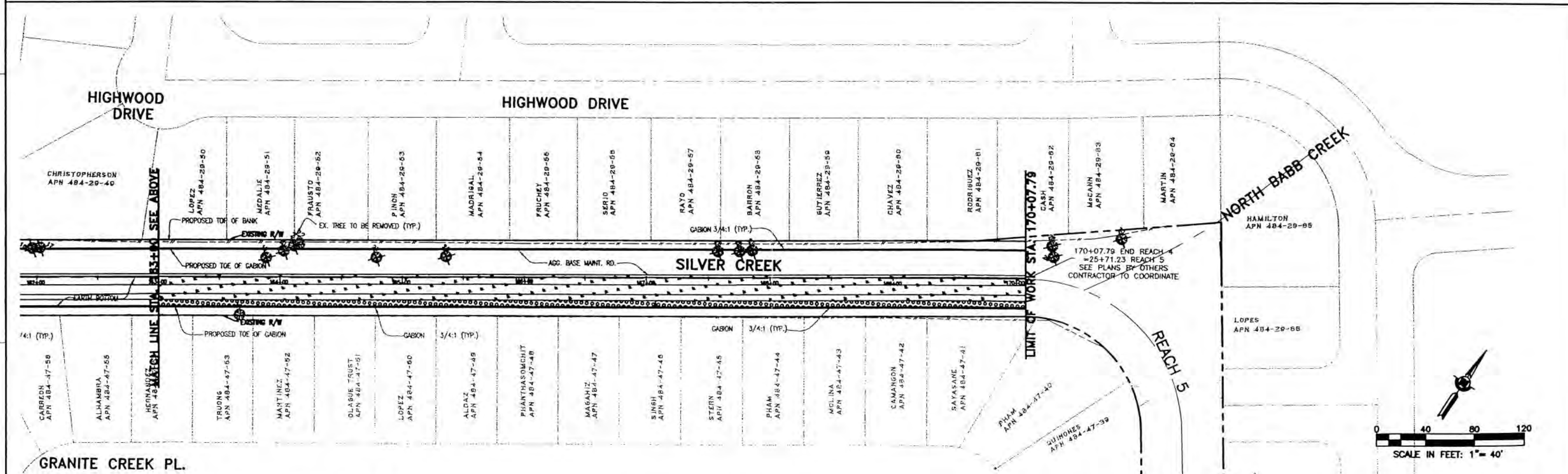
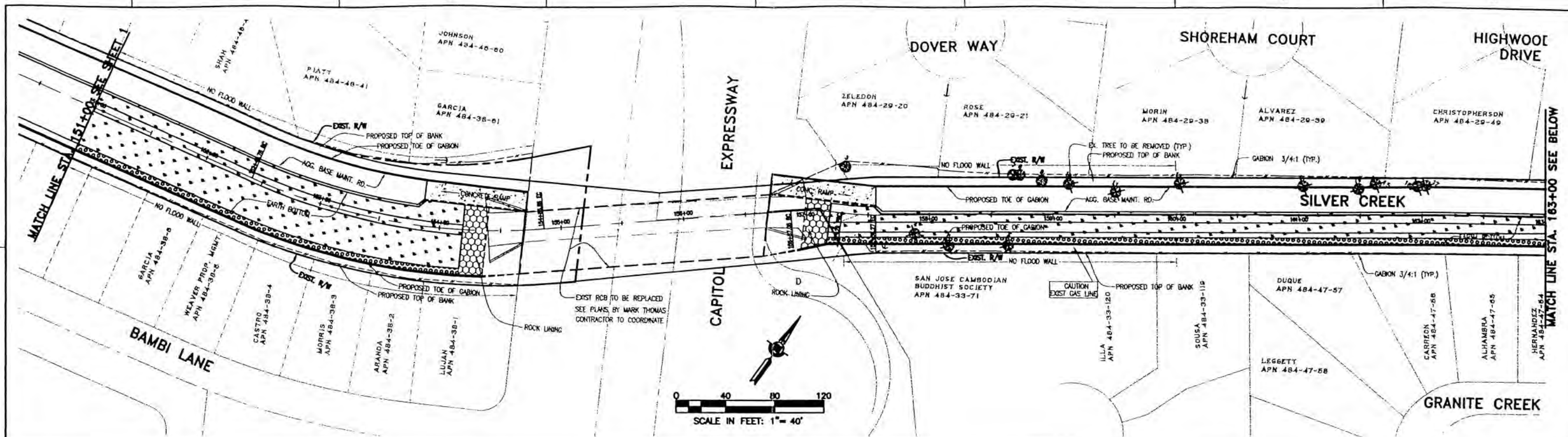
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Reach 3E & 3F

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PATH: Y:\J065\008500\002008\FINAL\30PERCENT\

DRAWING: HSPN-282.DWG



REV	DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES	DATE	DESIGN	DRAWN	CHECKED	M.E.R.	ACCEPTED BY DISTRICT	DATE	PROJECT ENGINEER
					7/26/01	E.H.	E.H.	E.H.				

Ruggeri-Jensen-Azar & Associates

100 N. MILPITAS BLVD., SUITE 100, MILPITAS, CA 95035

PHONE: (408) 934-1388 • FAX: (408) 934-1388

Santa Clara Valley Water District

ACCEPTED BY DISTRICT

DATE

PROJECT ENGINEER

LOWER SILVER CREEK, REACH 4

HABITAT PLANTING AREAS

VERIFY SCALES

0 1"

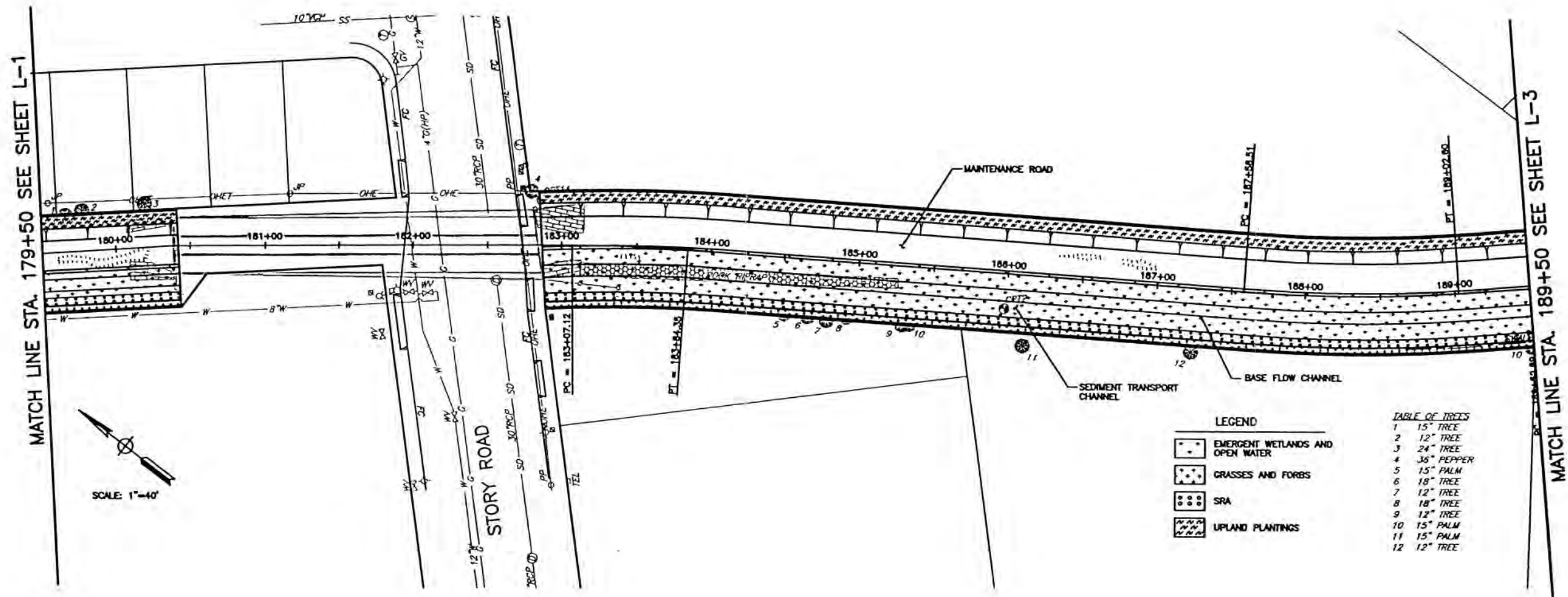
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SCALE AS SHOWN

SHEET

2

2 OF 51TS



REV	DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES	CONSULTANT STAMP	DATE	DESIGN RMD	DRAWN MD	CHECKED VMB	PROJECT BINDER	ACCEPTED BY DISTRICT	DATE	LOWER SILVER CREEK REACHES 5 & 6 HABITAT AREAS PLAN AND PROFILE STA. 179+50 TO STA. 189+50	VERIFY SCALES	SCALE AS SHOWN	SHEET	XX OF XXX
				PARSONS ENGINEERING SCIENCE, INC. Oakland, California (510) 881-9085										0 1'	1"	L-2	XX OF XXX

LEGEND

-  EMERGENT WETLANDS AND OPEN WATER
-  GRASSES AND FORBS
-  SPA
-  UPLAND PLANTINGS

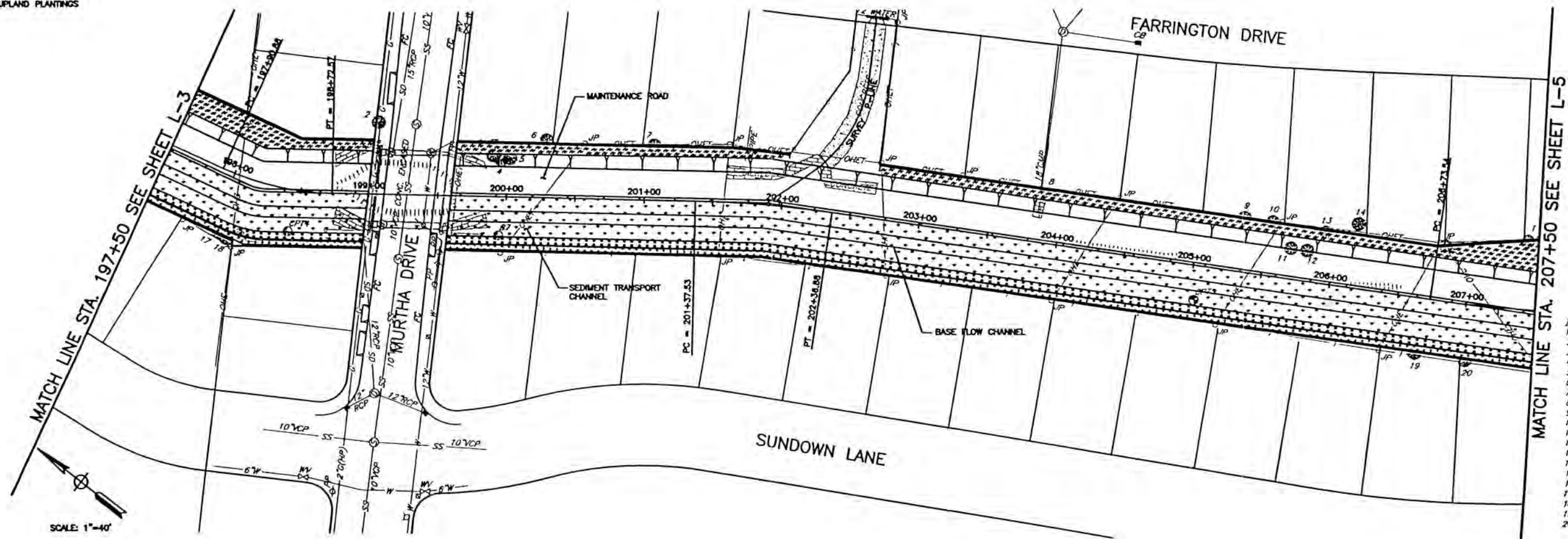


TABLE OF TREES	
1	24" WALNUT
2	30" TREE
3	15" TREE
4	15" PEPPER
5	8" TREE
6	36" TREE
7	18" TREE
8	15" TREE
9	32" TREE
10	12" TREE
11	20" TREE
12	20" TREE
13	20" TREE
14	36" TREE
15	24" TREE
16	?
17	?
18	?
19	12" TREE
20	12" TREE

REV	DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES

PARSONS ENGINEERING SCIENCE, INC.
Oakland, California
(510) 891-9065

CONSULTANT
STAMP

DATE
MM/DD/YY
DESIGN
RMD
DRAWN
MD
CHECKED
VMB

Santa Clara Valley Water District

ACCEPTED BY DISTRICT

DATE

PROJECT ENGINEER

**LOWER SILVER CREEK
REACHES 5 & 6
HABITAT AREAS
PLAN AND PROFILE
STA. 197+50 TO STA. 207+50**

VERIFY SCALES

0 1'

1" = 40'

1" = 10'

1" = 20'

1" = 40'

1" = 80'

1" = 160'

1" = 320'

1" = 640'

1" = 1280'

1" = 2560'

1" = 5120'

1" = 10240'

1" = 20480'

1" = 40960'

1" = 81920'

1" = 163840'

1" = 327680'

1" = 655360'

1" = 1310720'

1" = 2621440'

1" = 5242880'

1" = 10485760'

1" = 20971520'

1" = 41943040'

1" = 83886080'

1" = 167772160'

1" = 335544320'

1" = 671088640'

1" = 1342177280'

1" = 2684354560'

1" = 5368709120'

1" = 10737418240'

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1" = 42949672960'

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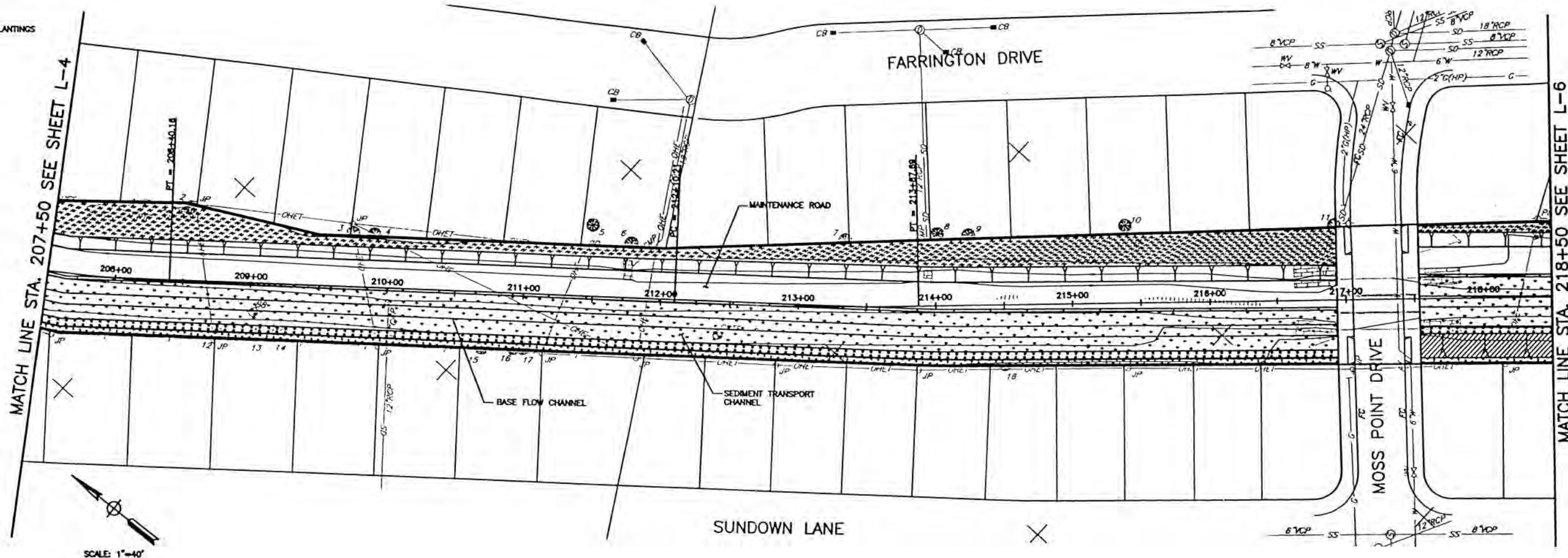
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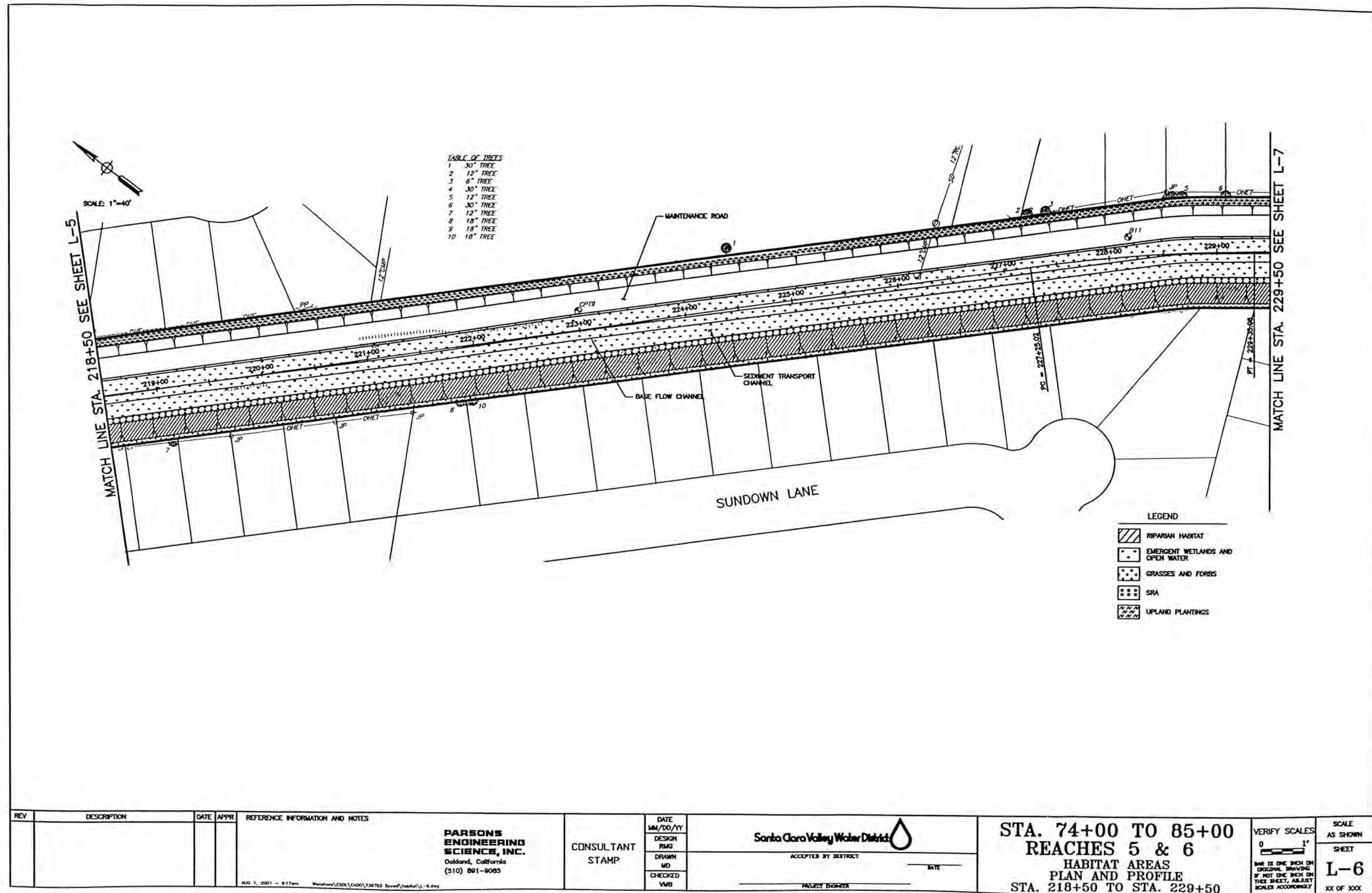
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-  EMERGENT WETLANDS AND OPEN WATER
-  GRASSES AND FORBS
-  SRA
-  UPLAND PLANTINGS

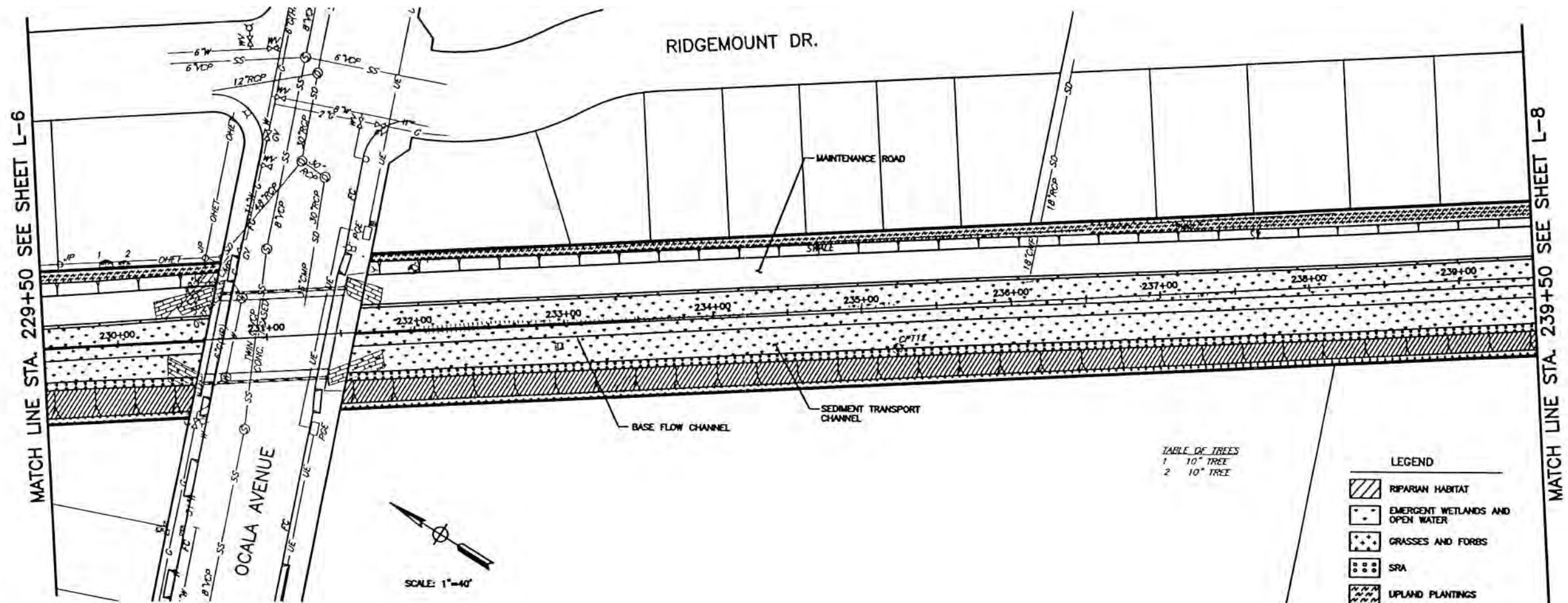
TABLE OF TREES

- 1 18" TREE
- 2 6" TREE
- 3 5" TREE
- 4 5" PEPPER
- 5 30" PALM
- 6 12" TREE
- 7 6" TREE
- 8 30" TREE
- 9 12" TREE
- 10 30" TREE
- 11 8" TREE
- 12 36" TREE
- 13 12" TREE
- 14 24" WALNUT
- 15 4" TREE
- 16 10" TREE
- 17 10" TREE
- 18 12" TREE

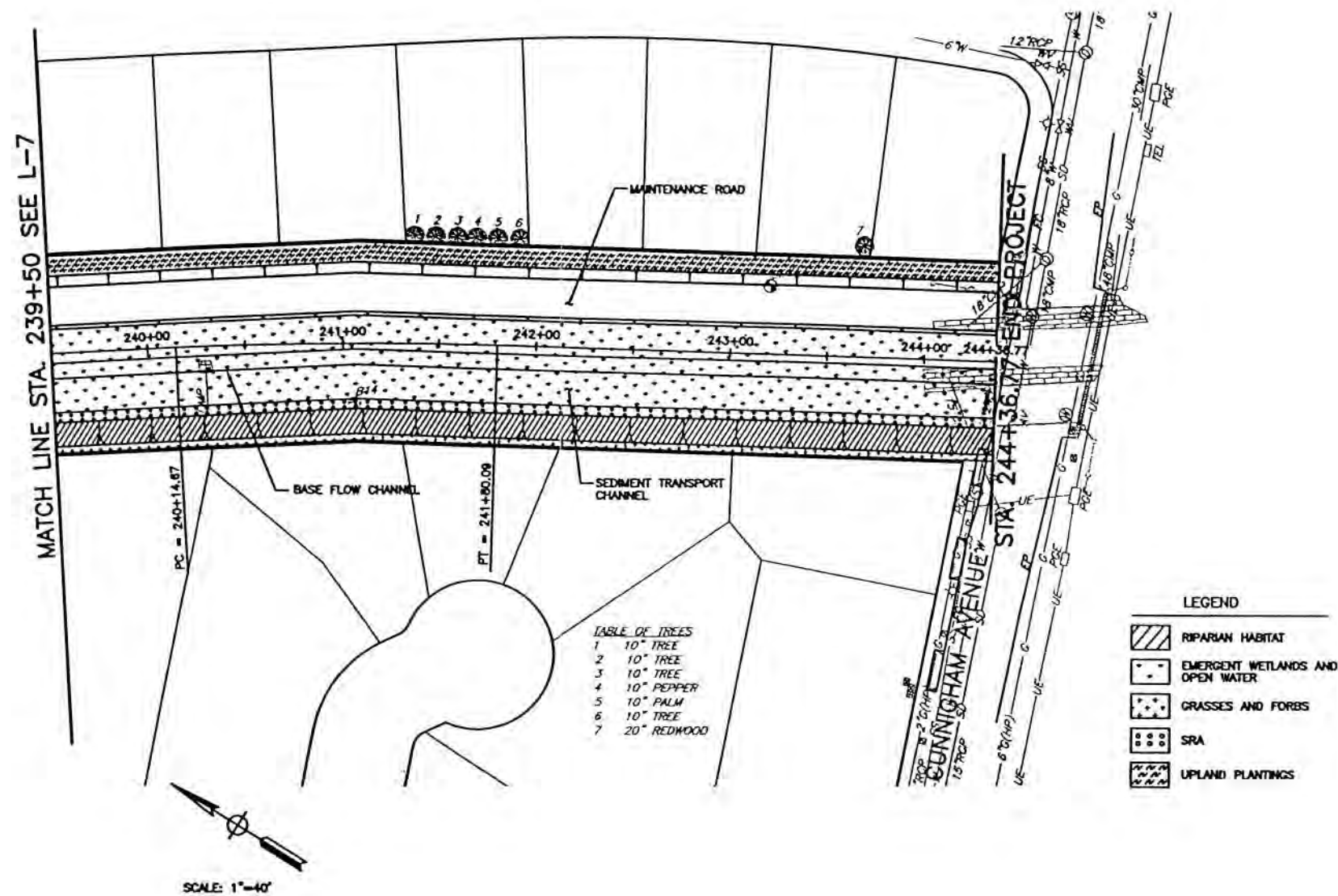


REV	DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES	DATE	DESIGN	DRAWN	CHECKED	DATE	PROJECT ENGINEER	LOWER SILVER CREEK REACHES 5 & 6 HABITAT AREAS PLAN AND PROFILE STA. 207+50 TO STA. 218+50	VERIFY SCALES 0 1' BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SCALE AS SHOWN SHEET L-5 XX OF XXX
				PARSONS ENGINEERING SCIENCE, INC. Oakland, California (510) 881-9085		DATE MM/DD/YY	DESIGN RMB	DRAWN MD	CHECKED VMB				





REV	DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES	DATE	DESIGN	DRAWN	CHECKED	VMB	DATE	PROJECT ENGINEER	LOWER SILVER CREEK REACHES 5 & 6 HABITAT AREAS PLAN AND PROFILE STA. 229+50 TO 239+50	VERIFY SCALES 0 1' BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SCALE AS SHOWN SHEET L-7 XX OF XXX
				PARSONS ENGINEERING SCIENCE, INC. Oakland, California (510) 891-9085		DESIGN	DRAWN	CHECKED	VMB					



REV	DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES

PARSONS ENGINEERING SCIENCE, INC.
Oakland, California
(510) 891-9085

CONSULTANT
STAMP

DATE
MM/DD/YY
DESIGN
RMD
DRAWN
MD
CHECKED
VMB

Santa Clara Valley Water District

ACCEPTED BY DISTRICT

DATE

PROJECT NUMBER

**LOWER SILVER CREEK
REACHES 5 & 6**
HABITAT AREAS
PLAN AND PROFILE
STA. 239+50 TO STA. 244+36.77

VERIFY SCALES

0 1"

BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

SCALE AS SHOWN


SHEET

L-8

XX OF XXX

APPENDIX 9A-3

Census Information



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Detailed Tables

You are here: [Main](#) ▶ [Data Sets](#) ▶ [Data Sets with Detailed Tables](#) ▶ [Geography](#) ▶ [Tables](#) ▶ [Results](#)

Use the links above to change your results | [Options](#) | [Print / Download](#) | [Related Items](#)

Note: use download to retrieve all selected tables and geographies

P52. HOUSEHOLD INCOME IN 1999 [17] - Universe: Households
Data Set: [Census 2000 Summary File 3 \(SF 3\) - Sample Data](#)

geographies 1-10 of 12 [Next](#)▶

NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.

	Census Tract 5011, Santa Clara County, California	Census Tract 5014, Santa Clara County, California	Census Tract 5033.21, Santa Clara County, California	Census Tract 5035.10, Santa Clara County, California	Census Tract 5035.11, Santa Clara County, California	Census Tract 5036.01, Santa Clara County, California	Census Tract 5037.02, Santa Clara County, California	Census Tract 5037.03, Santa Clara County, California	Census Tract 5037.07, Santa Clara County, California	Census Tract 5037.09, Santa Clara County, California
Total:	2,520	1,787	1,027	1,311	821	877	1,714	867	1,377	1,540
Less than \$10,000	228	163	17	58	16	78	164	26	64	156
\$10,000 to \$14,999	191	93	25	26	0	18	49	27	26	136
\$15,000 to \$19,999	149	89	26	46	0	56	96	37	11	94
\$20,000 to \$24,999	144	109	0	64	46	53	103	72	75	165
\$25,000 to \$29,999	104	51	0	73	84	87	111	53	44	35
\$30,000 to \$34,999	67	122	0	44	28	74	76	44	102	67
\$35,000 to \$39,999	166	143	0	19	47	105	75	22	38	80
\$40,000 to \$44,999	72	97	19	89	36	48	87	53	134	103
\$45,000 to \$49,999	112	95	22	49	14	53	45	40	153	79
\$50,000 to \$59,999	219	173	46	160	63	37	193	44	91	102
\$60,000 to \$74,999	314	257	72	104	123	138	272	147	98	223
\$75,000 to \$99,999	311	221	133	253	192	63	155	114	251	166
\$100,000 to \$124,999	200	70	305	102	108	6	128	67	147	60
\$125,000 to \$149,999	87	36	140	147	18	12	119	52	57	36
\$150,000 to \$199,999	109	57	106	66	37	40	14	31	48	38
\$200,000 or more	47	11	116	11	9	9	27	38	38	0

U.S. Census Bureau
Census 2000

P53. MEDIAN HOUSEHOLD INCOME IN 1999 (DOLLARS) [1] - Universe: Households
Data Set: [Census 2000 Summary File 3 \(SF 3\) - Sample Data](#)

geographies 1-10 of 12 [Next](#)▶

NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.

	Census Tract 5011, Santa Clara County, California	Census Tract 5014, Santa Clara County, California	Census Tract 5033.21, Santa Clara County, California	Census Tract 5035.10, Santa Clara County, California	Census Tract 5035.11, Santa Clara County, California	Census Tract 5036.01, Santa Clara County, California	Census Tract 5037.02, Santa Clara County, California	Census Tract 5037.03, Santa Clara County, California	Census Tract 5037.07, Santa Clara County, California	Census Tract 5037.09, Santa Clara County, California
Median household income in 1999	51,646	47,454	110,020	62,868	68,872	38,750	53,833	61,140	54,292	41,814

U.S. Census Bureau
Census 2000

P76. FAMILY INCOME IN 1999 [17] - Universe: FamiliesData Set: Census 2000 Summary File 3 (SF 3) - Sample Datageographies **1-10** of **12** [Next](#)NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.

	Census Tract 5011, Santa Clara County, California	Census Tract 5014, Santa Clara County, California	Census Tract 5033.21, Santa Clara County, California	Census Tract 5035.10, Santa Clara County, California	Census Tract 5035.11, Santa Clara County, California	Census Tract 5036.01, Santa Clara County, California	Census Tract 5037.02, Santa Clara County, California	Census Tract 5037.03, Santa Clara County, California	Census Tract 5037.07, Santa Clara County, California	Census Tract 5037.09, Santa Clara County, California
Total:	1,547	1,334	973	1,175	770	721	1,467	817	1,171	1,414
Less than \$10,000	85	86	9	71	16	46	81	37	69	163
\$10,000 to \$14,999	85	84	25	26	0	18	26	27	13	135
\$15,000 to \$19,999	95	67	17	52	0	52	115	49	41	92
\$20,000 to \$24,999	110	84	0	70	37	48	103	67	75	145
\$25,000 to \$29,999	67	53	0	75	84	74	106	38	26	28
\$30,000 to \$34,999	29	75	11	22	23	45	61	44	120	102
\$35,000 to \$39,999	126	118	11	12	47	80	87	32	34	51
\$40,000 to \$44,999	58	101	28	74	27	48	76	48	114	108
\$45,000 to \$49,999	98	69	22	35	22	32	63	31	42	75
\$50,000 to \$59,999	129	146	22	145	54	48	168	71	111	81
\$60,000 to \$74,999	155	191	57	84	130	110	239	114	119	164
\$75,000 to \$99,999	213	148	142	241	187	56	130	97	224	157
\$100,000 to \$124,999	136	30	280	86	88	8	66	53	62	46
\$125,000 to \$149,999	78	32	141	121	23	7	113	42	61	36
\$150,000 to \$199,999	47	45	92	61	27	40	14	42	29	31
\$200,000 or more	36	5	116	0	5	9	19	25	31	0

U.S. Census Bureau
Census 2000**P77. MEDIAN FAMILY INCOME IN 1999 (DOLLARS) [1] - Universe: Families**Data Set: Census 2000 Summary File 3 (SF 3) - Sample Datageographies **1-10** of **12** [Next](#)NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.

	Census Tract 5011, Santa Clara County, California	Census Tract 5014, Santa Clara County, California	Census Tract 5033.21, Santa Clara County, California	Census Tract 5035.10, Santa Clara County, California	Census Tract 5035.11, Santa Clara County, California	Census Tract 5036.01, Santa Clara County, California	Census Tract 5037.02, Santa Clara County, California	Census Tract 5037.03, Santa Clara County, California	Census Tract 5037.07, Santa Clara County, California	Census Tract 5037.09, Santa Clara County, California
Median family income in 1999	52,651	44,917	110,221	60,550	68,354	39,880	51,685	55,461	53,844	38,750

U.S. Census Bureau
Census 2000**P82. PER CAPITA INCOME IN 1999 (DOLLARS) [1] - Universe: Total population**Data Set: Census 2000 Summary File 3 (SF 3) - Sample Datageographies **1-10** of **12** [Next](#)NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.

	Census Tract	Census Tract	Census Tract	Census Tract	Census Tract	Census Tract	Census Tract	Census Tract	Census Tract	Census Tract
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	5011, Santa Clara County, California	5014, Santa Clara County, California	5033.21, Santa Clara County, California	5035.10, Santa Clara County, California	5035.11, Santa Clara County, California	5036.01, Santa Clara County, California	5037.02, Santa Clara County, California	5037.03, Santa Clara County, California	5037.07, Santa Clara County, California	5037.09, Santa Clara County, California
Per capita income in 1999	20,631	15,220	25,515	15,593	16,417	14,684	12,233	13,328	15,720	11,771

U.S. Census Bureau
Census 2000

P88. RATIO OF INCOME IN 1999 TO POVERTY LEVEL [10] - Universe: Population for whom poverty status is determined

Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data

geographies **1-10** of **12** [Next](#) ▶

NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.

	Census Tract 5011, Santa Clara County, California	Census Tract 5014, Santa Clara County, California	Census Tract 5033.21, Santa Clara County, California	Census Tract 5035.10, Santa Clara County, California	Census Tract 5035.11, Santa Clara County, California	Census Tract 5036.01, Santa Clara County, California	Census Tract 5037.02, Santa Clara County, California	Census Tract 5037.03, Santa Clara County, California	Census Tract 5037.07, Santa Clara County, California	Census Tract 5037.09, Santa Clara County, California
Total:	7,886	6,428	4,845	6,339	3,869	3,101	8,223	4,602	6,201	6,280
Under .50	591	613	56	424	135	275	708	337	413	639
.50 to .74	305	198	51	87	42	38	249	213	238	275
.75 to .99	363	233	64	469	13	139	422	116	366	440
1.00 to 1.24	383	285	34	205	279	124	377	150	295	504
1.25 to 1.49	251	467	0	243	101	106	541	174	434	398
1.50 to 1.74	569	372	90	117	144	250	476	275	174	264
1.75 to 1.84	136	211	12	163	91	102	244	127	37	76
1.85 to 1.99	123	133	39	150	95	191	253	272	363	113
2.00 and over	5,165	3,916	4,499	4,481	2,969	1,876	4,953	2,938	3,881	3,571

U.S. Census Bureau
Census 2000

P89. POVERTY STATUS IN 1999 BY AGE BY HOUSEHOLD TYPE [39] - Universe: Population for whom poverty status is determined

Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data

geographies **1-10** of **12** [Next](#) ▶

NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.


	Census Tract 5011, Santa Clara County, California	Census Tract 5014, Santa Clara County, California	Census Tract 5033.21, Santa Clara County, California	Census Tract 5035.10, Santa Clara County, California	Census Tract 5035.11, Santa Clara County, California	Census Tract 5036.01, Santa Clara County, California	Census Tract 5037.02, Santa Clara County, California	Census Tract 5037.03, Santa Clara County, California	Census Tract 5037.07, Santa Clara County, California	Census Tract 5037.09, Santa Clara County, California
Total:	7,886	6,428	4,845	6,339	3,869	3,101	8,223	4,602	6,201	6,280
Income in 1999 below poverty level:	1,259	1,044	171	980	190	452	1,379	666	1,017	1,354
Under 65 years:	1,071	969	159	944	182	420	1,279	661	1,001	1,308
In married-couple families	402	468	114	449	20	266	773	331	450	742
In other families:	425	437	37	403	145	79	407	314	486	450
Male householder, no wife present	192	245	9	68	38	21	75	62	98	125
Female householder, no husband present	233	192	28	335	107	58	332	252	388	325
Unrelated individuals	244	64	8	92	17	75	99	16	65	116
65 to 74 years:	66	53	8	25	0	24	39	5	16	30
In married-couple families	26	13	8	5	0	0	18	0	0	7
In other families:	0	15	0	6	0	9	6	4	16	18
Male householder, no wife present	0	0	0	0	0	9	0	0	0	0

Female householder, no husband present	0	15	0	6	0	0	6	4	16	18
Unrelated individuals	40	25	0	14	0	15	15	1	0	5
75 years and over:	122	22	4	11	8	8	61	0	0	16
In married-couple families	15	0	4	11	0	0	25	0	0	16
In other families:	26	0	0	0	8	0	14	0	0	0
Male householder, no wife present	16	0	0	0	0	0	0	0	0	0
Female householder, no husband present	10	0	0	0	8	0	14	0	0	0
Unrelated individuals	81	22	0	0	0	8	22	0	0	0
Income in 1999 at or above poverty level:	6,627	5,384	4,674	5,359	3,679	2,649	6,844	3,936	5,184	4,926
Under 65 years:	5,958	5,040	4,311	4,980	3,385	2,347	6,339	3,686	4,932	4,660
In married-couple families	3,638	2,921	3,501	3,847	2,652	1,557	4,807	2,613	3,440	3,119
In other families:	1,484	1,657	741	962	666	602	1,382	1,010	1,215	1,449
Male householder, no wife present	623	806	297	65	206	206	693	438	759	650
Female householder, no husband present	861	851	444	897	460	396	689	572	456	799
Unrelated individuals	836	462	69	171	67	188	150	63	277	92
65 to 74 years:	236	145	231	218	178	191	319	173	167	191
In married-couple families	99	95	169	161	144	136	182	123	94	150
In other families:	86	29	62	35	21	37	78	50	51	41
Male householder, no wife present	28	21	14	0	15	0	52	22	39	19
Female householder, no husband present	58	8	48	35	6	37	26	28	12	22
Unrelated individuals	51	21	0	22	13	18	59	0	22	0
75 years and over:	433	199	132	161	116	111	186	77	85	75
In married-couple families	169	99	132	102	48	79	76	38	67	40
In other families:	74	46	0	44	68	21	43	30	7	27
Male householder, no wife present	15	11	0	0	13	0	17	11	7	18
Female householder, no husband present	59	35	0	44	55	21	26	19	0	9
Unrelated individuals	190	54	0	15	0	11	67	9	11	8

U.S. Census Bureau
Census 2000

Standard Error/Variance documentation for this dataset:

[Accuracy of the Data: Census 2000 Summary File 3 \(SF 3\) - Sample Data \(PDF 141.5KB\)](#)

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U.S. Census Bureau

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geographies **1-10** of **11** [Next](#) ▶NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.

	Census Tract 5014, Santa Clara County, California	Census Tract 5015.01, Santa Clara County, California	Census Tract 5035.06, Santa Clara County, California	Census Tract 5035.10, Santa Clara County, California	Census Tract 5036.02, Santa Clara County, California	Census Tract 5037.02, Santa Clara County, California	Census Tract 5037.03, Santa Clara County, California	Census Tract 5037.06, Santa Clara County, California	Census Tract 5037.07, Santa Clara County, California	Census Tract 5037.08, Santa Clara County, California
Total:	1,787	1,056	1,238	1,311	1,161	1,714	867	2,148	1,377	729
Less than \$10,000	163	71	152	58	110	164	26	316	64	43
\$10,000 to \$14,999	93	56	23	26	53	49	27	172	26	31
\$15,000 to \$19,999	89	88	55	46	70	96	37	125	11	43
\$20,000 to \$24,999	109	44	38	64	20	103	72	191	75	29
\$25,000 to \$29,999	51	73	37	73	50	111	53	155	44	20
\$30,000 to \$34,999	122	95	28	44	56	76	44	78	102	28
\$35,000 to \$39,999	143	54	71	19	46	75	22	123	38	97
\$40,000 to \$44,999	97	76	52	89	45	87	53	114	134	19
\$45,000 to \$49,999	95	85	43	49	58	45	40	96	153	8
\$50,000 to \$59,999	173	75	96	160	168	193	44	216	91	63
\$60,000 to \$74,999	257	97	84	104	149	272	147	240	98	90
\$75,000 to \$99,999	221	141	238	253	150	155	114	218	251	117
\$100,000 to \$124,999	70	76	178	102	157	128	67	56	147	23
\$125,000 to \$149,999	36	7	44	147	7	119	52	35	57	48
\$150,000 to \$199,999	57	7	49	66	22	14	31	13	48	55
\$200,000 or more	11	11	50	11	0	27	38	0	38	15

U.S. Census Bureau
Census 2000**P53. MEDIAN HOUSEHOLD INCOME IN 1999 (DOLLARS) [1] - Universe: Households**Data Set: [Census 2000 Summary File 3 \(SF 3\) - Sample Data](#)geographies **1-10** of **11** [Next](#) ▶NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.

	Census Tract 5014, Santa Clara County, California	Census Tract 5015.01, Santa Clara County, California	Census Tract 5035.06, Santa Clara County, California	Census Tract 5035.10, Santa Clara County, California	Census Tract 5036.02, Santa Clara County, California	Census Tract 5037.02, Santa Clara County, California	Census Tract 5037.03, Santa Clara County, California	Census Tract 5037.06, Santa Clara County, California	Census Tract 5037.07, Santa Clara County, California	Census Tract 5037.08, Santa Clara County, California
Median household income in 1999	47,454	42,136	65,962	62,868	53,520	53,833	61,140	36,217	54,292	56,118

U.S. Census Bureau

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P52. HOUSEHOLD INCOME IN 1999 [17] - Universe: Households

Data Set: [Census 2000 Summary File 3 \(SF 3\) - Sample Data](#)[Previous](#) geographies **11-12** of **12**NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.

	Census Tract 5040.01, Santa Clara County, California	Census Tract 5040.02, Santa Clara County, California
Total:	1,428	1,071
Less than \$10,000	51	35
\$10,000 to \$14,999	64	47
\$15,000 to \$19,999	71	12
\$20,000 to \$24,999	65	57
\$25,000 to \$29,999	101	19
\$30,000 to \$34,999	82	29
\$35,000 to \$39,999	54	21
\$40,000 to \$44,999	71	78
\$45,000 to \$49,999	60	84
\$50,000 to \$59,999	154	75
\$60,000 to \$74,999	152	126
\$75,000 to \$99,999	338	180
\$100,000 to \$124,999	101	207
\$125,000 to \$149,999	46	63
\$150,000 to \$199,999	0	26
\$200,000 or more	18	12

U.S. Census Bureau
Census 2000

P53. MEDIAN HOUSEHOLD INCOME IN 1999 (DOLLARS) [1] - Universe: Households

Data Set: [Census 2000 Summary File 3 \(SF 3\) - Sample Data](#)[Previous](#) geographies **11-12** of **12**NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.

	Census Tract 5040.01, Santa Clara County, California	Census Tract 5040.02, Santa Clara County, California
Median household income in 1999	55,536	69,648

U.S. Census Bureau
Census 2000

State & County QuickFacts

California

People QuickFacts	California	USA
Population, 2009 estimate	36,961,664	307,006,550
Population, percent change, April 1, 2000 to July 1, 2009	9.1%	9.1%
Population estimates base (April 1) 2000	33,871,648	281,424,602
Persons under 5 years old, percent, 2009	7.5%	6.9%
Persons under 18 years old, percent, 2009	25.5%	24.3%
Persons 65 years old and over, percent, 2009	11.2%	12.9%
Female persons, percent, 2009	49.9%	50.7%
White persons, percent, 2009 (a)	76.4%	79.6%
Black persons, percent, 2009 (a)	6.6%	12.9%
American Indian and Alaska Native persons, percent, 2009 (a)	1.2%	1.0%
Asian persons, percent, 2009 (a)	12.7%	4.6%
Native Hawaiian and Other Pacific Islander, percent, 2009 (a)	0.4%	0.2%
Persons reporting two or more races, percent, 2009	2.6%	1.7%
Persons of Hispanic or Latino origin, percent, 2009 (b)	37.0%	15.8%
White persons not Hispanic, percent, 2009	41.7%	65.1%
Living in same house in 1995 and 2000, pct 5 yrs old & over	50.2%	54.1%
Foreign born persons, percent, 2000	26.2%	11.1%
Language other than English spoken at home, pct age 5+, 2000	39.5%	17.9%
High school graduates, percent of persons age 25+, 2000	76.8%	80.4%
Bachelor's degree or higher, pct of persons age 25+, 2000	26.6%	24.4%
Persons with a disability, age 5+, 2000	5,923,361	49,746,248

Federal spending, 2008

299,922,630¹ 2,771,782,152²**Geography QuickFacts**

	California		USA
Land area, 2000 (square miles)	155,959.34	3,537,438.44	
Persons per square mile, 2000	217.2	79.6	
FIPS Code	06		

1: Includes data not distributed by county.
2: Includes data not distributed by state.

(a) Includes persons reporting only one race.
(b) Hispanics may be of any race, so also are included in applicable race categories.

D: Suppressed to avoid disclosure of confidential information
F: Fewer than 100 firms
FN: Footnote on this item for this area in place of data
NA: Not available
S: Suppressed; does not meet publication standards
X: Not applicable
Z: Value greater than zero but less than half unit of measure shown

Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, Census of Population and Housing, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report
Last Revised: Thursday, 04-Nov-2010 12:46:17 EDT

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HU_SIZE_O	HU_SIZE_R	STATE	COUNTY	COUSUB	PLACE	TRACT *	UR	BLOCK_GROU
2.87	3.93	06	085	92830	68000	501400	U	2
4.46	3.72	06	085	92830	68000	501501	U	1
5.63	4.31	06	085	92830	68000	503506	U	1
4.84	5.43	06	085	92830	68000	503510	U	3
4.9	3.96	06	085	92830	68000	503602	U	1
4.44	3.35	06	085	92830	68000	503602	U	2
4.88	5.02	06	085	92830	68000	503702	U	3
5.63	4.42	06	085	92830	68000	503703	U	2
3.96	3.29	06	085	92830	68000	503706	U	2
5.7	4.47	06	085	92830	68000	503707	U	1
4.29	4.07	06	085	92830	68000	503708	U	1
4.56	6.67	06	085	92830	68000	504002	U	1

FID	Shape *	AREA	PERIMETER	CEN00BG03_	CEN00BG031	LOGRECNO
7	Polygon	243554.358614	2031.169766	18400	19701	0074161
11	Polygon	611136.298823	3241.729086	18449	19750	0074165
5	Polygon	385049.569873	2971.052142	18396	19697	0074519
9	Polygon	252438.776028	2166.759976	18409	19710	0074537
4	Polygon	254849.977424	2083.552572	18373	19674	0074548
8	Polygon	933668.162705	4214.30937	18402	19703	0074549
6	Polygon	331908.418398	2476.331351	18399	19700	0074554
10	Polygon	329461.441797	2973.253463	18413	19714	0074558
1	Polygon	617239.921045	3237.713437	18171	19470	0074562
2	Polygon	136413.659061	1604.039839	18222	19522	0074565
0	Polygon	1003158.19706	4417.265319	18082	19380	0074570
3	Polygon	443053.69571	2801.219626	18249	19549	0074602

SUMLEV_090	WATER	OID	AREA	PERIMETER	SPLIT_BG_	SPLIT_BG_I
060859283068000501400U2	0	9972	243554.358614	2031.169766	9973	9973
060859283068000501501U1	0	10014	611136.298823	3241.729086	10015	10015
060859283068000503506U1	0	9970	385049.569873	2971.052142	9971	9971
060859283068000503510U3	0	9981	252438.776028	2166.759976	9982	9982
060859283068000503602U1	0	9953	254849.977424	2083.552572	9954	9954
060859283068000503602U2	0	9974	933668.162705	4214.30937	9975	9975
060859283068000503702U3	0	9971	331908.418398	2476.331351	9972	9972
060859283068000503703U2	0	9983	329461.441797	2973.253463	9984	9984
060859283068000503706U2	0	9799	617239.921045	3237.713437	9800	9800
060859283068000503707U1	0	9834	136413.659061	1604.039839	9835	9835
060859283068000503708U1	0	9737	1003158.19706	4417.265319	9738	9738
060859283068000504002U1	0	9858	443053.69571	2801.219626	9859	9859

LOGRECNO *	SUMLEV_090	PLACE_NAME	PLACE_TYPE	UA	UA_NAME	UA_TYPE
0074161	060859283068000501400U2	San Jose	CITY	79039	San Jose	U
0074165	060859283068000501501U1	San Jose	CITY	79039	San Jose	U
0074519	060859283068000503506U1	San Jose	CITY	79039	San Jose	U
0074537	060859283068000503510U3	San Jose	CITY	79039	San Jose	U
0074548	060859283068000503602U1	San Jose	CITY	79039	San Jose	U
0074549	060859283068000503602U2	San Jose	CITY	79039	San Jose	U
0074554	060859283068000503702U3	San Jose	CITY	79039	San Jose	U
0074558	060859283068000503703U2	San Jose	CITY	79039	San Jose	U
0074562	060859283068000503706U2	San Jose	CITY	79039	San Jose	U
0074565	060859283068000503707U1	San Jose	CITY	79039	San Jose	U
0074570	060859283068000503708U1	San Jose	CITY	79039	San Jose	U
0074602	060859283068000504002U1	San Jose	CITY	79039	San Jose	U

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BLKGRP	AREALAND	AREAWATR	POP100	POP	POP_URB	POP_RUR	WHITE	BLACK
2	243546	0	1208	1239	1239	0	416	31
1	611135	0	4232	4232	4232	0	1077	70
1	385045	0	2533	2447	2447	0	357	103
3	252433	0	1947	2035	2035	0	675	28
1	254843	0	1725	1702	1702	0	674	81
2	933666	0	3020	3043	3043	0	672	61
3	331905	0	1655	1670	1670	0	501	11
2	329459	0	2473	2329	2329	0	208	101
2	617235	0	4045	4060	4060	0	1321	230
1	136413	0	2129	2306	2306	0	498	138
1	1003155	0	2039	2090	2090	0	185	108
1	443053	0	1924	2329	2329	0	482	136

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INDIAN	ASIAN	ISLAND	OTHER	MULTIRACE	HISP	MALE	FEMALE	F_18PLUS
84	0	0	598	110	804	620	619	415
35	776	21	2045	208	3030	2234	1998	1330
0	1381	41	509	56	840	1143	1304	922
0	296	24	920	92	1402	1103	932	725
13	123	0	692	119	1274	802	900	573
0	1037	0	1019	254	1682	1612	1431	990
20	46	0	1077	15	1562	858	812	563
22	818	0	1130	50	1371	1250	1079	716
0	1489	0	913	107	1944	1970	2090	1588
54	617	0	761	238	1538	1235	1071	704
0	1504	0	193	100	357	1088	1002	678
0	990	0	627	94	1130	1175	1154	706

M_18PLUS	M_21PLUS	F_21PLUS	M_65PLUS	F_65PLUS	POP_HH	POP_GQ	FAM_HH
423	391	388	52	46	1239	0	263
1535	1427	1227	92	158	4219	13	788
653	622	789	62	78	2447	0	504
806	751	638	120	92	2035	0	376
535	475	525	41	103	1702	0	327
1210	1142	947	79	101	3043	0	603
551	516	502	63	81	1670	0	306
756	692	593	37	44	2329	0	445
1438	1335	1543	231	400	3733	327	821
758	712	667	22	38	2306	0	398
752	679	639	85	64	2090	0	425
786	702	668	62	41	2329	0	409

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NONFAM_HH	HU100	HU	HU_URBAN	HU_RURAL	HU_OCCUP	HU_VAC	HU_OWN	HU_RENT
5	352	350	350	0	341	9	95	246
96	1075	1075	1075	0	1057	18	392	665
4	536	531	531	0	514	17	175	339
19	389	408	408	0	408	0	307	101
5	382	396	396	0	393	3	155	238
46	784	770	770	0	762	8	452	310
16	330	337	337	0	337	0	164	173
13	485	485	485	0	483	2	160	323
64	1105	1098	1098	0	1086	12	246	840
25	450	460	460	0	460	0	202	258
33	492	498	498	0	498	0	286	212
4	414	452	452	0	443	9	296	147

income	minority	POP100	POP	POP_URB	POP_RUR	WHITE	BLACK	INDIAN	
0	0	0	1422	1568	1568	0	658	0	25
0	0	0	3238	3238	3238	0	1442	39	40
0	0	0	2146	2082	2082	0	174	84	0
0	0	0	2853	2768	2768	0	930	59	11
0	0	0	1588	1585	1585	0	738	51	46
0	0	0	2067	1932	1932	0	599	39	0
0	0	0	1809	1944	1944	0	470	2	0
0	0	0	1070	1056	1056	0	537	34	71
0	0	0	2058	2072	2072	0	1167	34	29
0	0	0	4113	4113	4113	0	1134	70	57
0	0	0	2581	2566	2566	0	988	75	52
0	0	0	2189	2333	2333	0	692	9	0
0	0	0	2716	2821	2821	0	630	89	34
0	0	0	1428	1146	1146	0	637	51	0
0	0	0	2513	2603	2603	0	534	57	38
0	0	0	3722	3637	3637	0	774	107	50
0	0	0	1580	1627	1627	0	487	44	0
0	0	0	585	644	644	0	95	0	0
0	0	0	3636	3231	3231	0	681	32	149

ASIAN	ISLAND	OTHER	MULTIRACE HISP	MALE	FEMALE	F_18PLUS	M_18PLUS	
295	0	535	55	890	862	706	538	590
437	0	970	310	2175	1715	1523	1118	1210
1557	24	0	243	112	1036	1046	728	740
387	0	1259	122	1912	1536	1232	803	883
97	0	523	130	1240	811	774	551	573
540	0	592	162	914	989	943	670	681
1195	0	220	57	695	941	1003	689	695
221	5	118	70	532	574	482	401	444
178	35	409	220	1015	1098	974	699	767
773	31	1802	246	3038	2089	2024	1316	1449
302	0	1053	96	2061	1443	1123	697	952
411	0	1116	105	1767	1169	1164	688	800
1714	0	177	177	729	1441	1380	957	1038
121	0	289	48	747	614	532	354	467
1377	23	498	76	990	1353	1250	917	944
1726	0	891	89	1677	1714	1923	1329	1103
125	0	856	115	1313	819	808	579	583
456	0	87	6	139	322	322	249	226
449	0	1785	135	2495	1556	1675	1180	1142

M_21PLUS	F_21PLUS	M_65PLUS	F_65PLUS	POP_HH	POP_GQ	FAM_HH	NONFAM_F	HU100
530	455	39	33	1568	0	300	26	443
1128	1046	74	152	3164	74	666	77	945
691	710	68	102	2082	0	404	0	431
799	748	46	43	2765	3	500	27	617
452	478	39	75	1585	0	299	5	330
605	626	102	72	1932	0	410	0	426
665	674	70	58	1934	10	360	9	394
398	394	52	69	921	135	244	12	306
664	639	66	147	2072	0	477	20	597
1306	1224	135	173	4113	0	749	12	883
850	667	83	70	2500	66	412	24	511
712	644	112	62	2333	0	372	0	383
922	930	47	110	2821	0	512	46	593
467	318	31	20	1146	0	261	18	359
896	842	39	47	2603	0	538	14	614
1042	1249	86	140	3637	0	853	10	914
531	530	55	49	1627	0	341	0	370
212	231	11	7	644	0	144	0	127
1086	1088	112	145	3231	0	607	17	660

HU	HU_URBAN	HU_RURAL	HU_OCCUP	HU_VAC	HU_OWN	HU_RETRACT
443	443	0	441	2	287	154 501100
945	945	0	928	17	289	639 501400
429	429	0	429	0	429	0 503321
623	623	0	611	12	297	314 503510
305	305	0	298	7	281	17 503510
420	420	0	418	2	329	89 503511
400	400	0	400	0	334	66 503511
307	307	0	298	9	103	195 503601
596	596	0	584	12	176	408 503601
883	883	0	878	5	333	545 503702
504	504	0	496	8	187	309 503702
383	383	0	383	0	262	121 503703
629	629	0	615	14	426	189 503707
313	313	0	307	6	225	82 503707
628	628	0	615	13	191	424 503709
910	910	0	910	0	116	794 503709
404	404	0	389	15	327	62 504001
143	143	0	143	0	87	56 504001
622	622	0	622	0	396	226 504002

77.16836735
83.10685608
85.3506244
85.58526012
90.47318612
77.27743271
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95.46676911
97.8828705
91.08789183
92.39130435
96.71928196

POP100	POP	POP_URB	POP_RUR	WHITE	BLACK	INDIAN	ASIAN	ISLAND
2039	2090	2090	0	185	108	0	1504	0
4045	4060	4060	0	1321	230	0	1489	0
2129	2306	2306	0	498	138	54	617	0
1924	2329	2329	0	482	136	0	990	0
1725	1702	1702	0	674	81	13	123	0
2533	2447	2447	0	357	103	0	1381	41
1655	1670	1670	0	501	11	20	46	0
1208	1239	1239	0	416	31	84	0	0
3020	3043	3043	0	672	61	0	1037	0
1947	2035	2035	0	675	28	0	296	24
2473	2329	2329	0	208	101	22	818	0
4232	4232	4232	0	1077	70	35	776	21

OTHER	MULTIRACE HISP		MALE	FEMALE	F_18PLUS	M_18PLUS	M_21PLUS	F_21PLUS
193	100	357	1088	1002	678	752	679	639
913	107	1944	1970	2090	1588	1438	1335	1543
761	238	1538	1235	1071	704	758	712	667
627	94	1130	1175	1154	706	786	702	668
692	119	1274	802	900	573	535	475	525
509	56	840	1143	1304	922	653	622	789
1077	15	1562	858	812	563	551	516	502
598	110	804	620	619	415	423	391	388
1019	254	1682	1612	1431	990	1210	1142	947
920	92	1402	1103	932	725	806	751	638
1130	50	1371	1250	1079	716	756	692	593
2045	208	3030	2234	1998	1330	1535	1427	1227

M_65PLUS	F_65PLUS	POP_HH	POP_GQ	TRACT	U BLOCK_GROU
85	64	2090	0	503708	U 1
231	400	3733	327	503706	U 2
22	38	2306	0	503707	U 1
62	41	2329	0	504002	U 1
41	103	1702	0	503602	U 1
62	78	2447	0	503506	U 1
63	81	1670	0	503702	U 3
52	46	1239	0	501400	U 2
79	101	3043	0	503602	U 2
120	92	2035	0	503510	U 3
37	44	2329	0	503703	U 2
92	158	4219	13	501501	U 1

94.21052632
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101.7779705
96.86560756
87.60282021
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98.14371257
74.17271994
91.35721328
85.995086
99.27007299
92.91115312

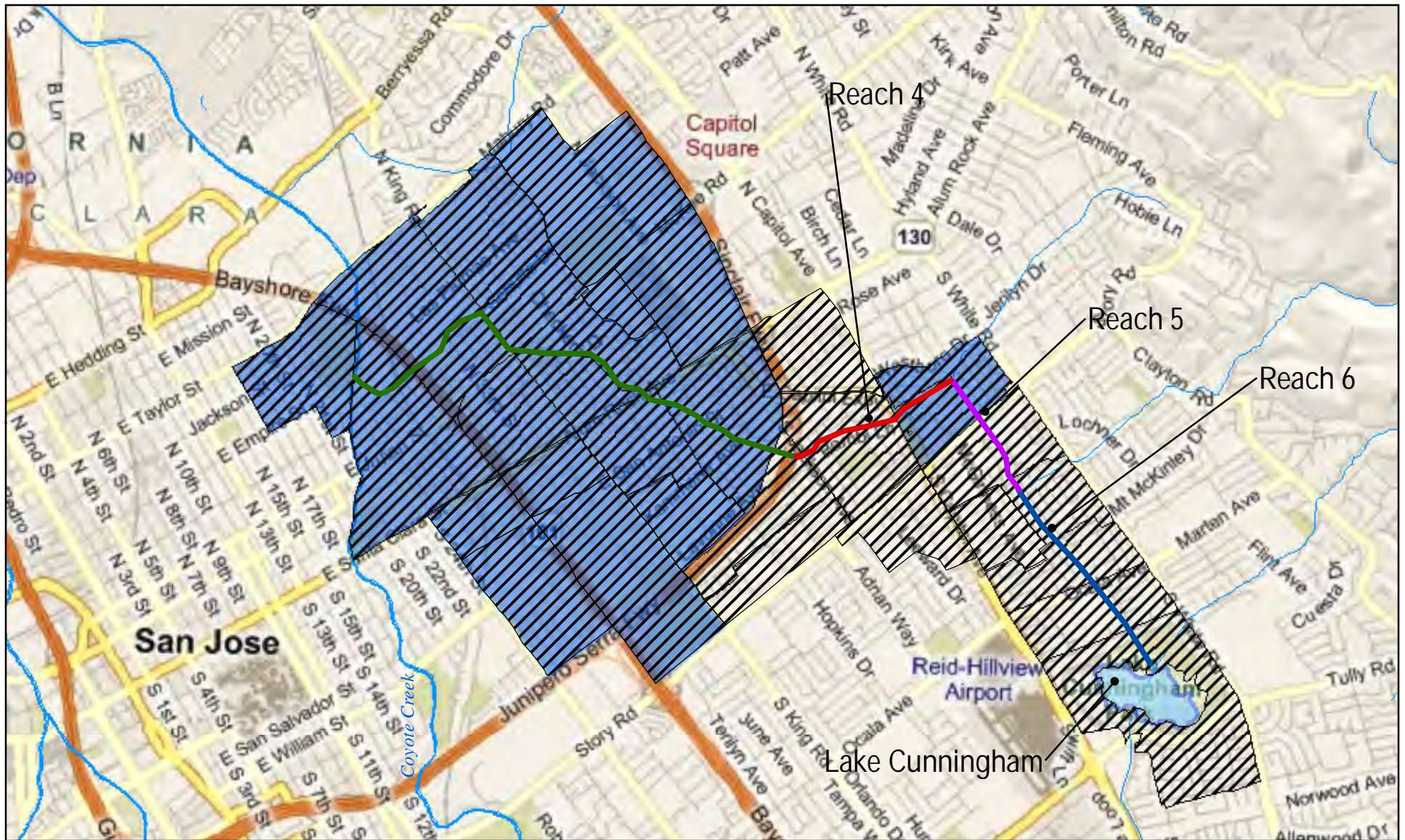


Figure 3-23. Disadvantaged Communities

Lower Silver Creek (Individual Reaches)

Reaches 1-3 (Construction Complete)

Reach 4

Reach 5

Reach 6

Lake Cunningham

Disadvantaged Communities

Low Income Census Tracts

Minority Census Tracts



Project: Lower Silver Creek Flood Protection Project

Source: Bing Maps, 2011, American Community Survey, 2000

RMC